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THE ESSENTIALS OF TEACHING

THE ESSENTIALS OF TEACHING

A BOOK FOR AMATEURS

BY

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1718

Instead of thy fathers shall be thy children,
whom thou mayest make princes in all the
earth.—*Psalm xlv. 16,*

TO VIVU
ALBROGLIAO

PREFACE

THIS book is intended to serve as a primer of method for amateurs and beginners in the art of teaching. It is based on a series of lectures delivered during the winter session of 1914-15 to the non-professional teachers engaged in teaching *practical* subjects in the continuation classes of the Edinburgh School Board.

The evolution of the continuation class has called forth a new type of teacher. For the important work of instruction there is urgently needed a large army of well-educated men and women who, in addition to being in close touch with practical affairs and having expert knowledge of a particular subject, possess some aptitude for teaching. One of the most pressing problems of the hour is to devise a means of providing a sufficient supply of competent teachers of technical and commercial subjects.

If Germany has taught us any lesson at all, it is surely that of the value of *preparedness and organisation*. For more than fifty years Germany has been assiduous in organising technical instruc-

tion and, as the result of years of practice and experiment, had, at the outbreak of war, an expert body of trade teachers unrivalled throughout the world. No matter how ruinously crippled, politically and economically, our enemy may be as a consequence of her ambition, it may be regarded as certain that her *educational machine* will remain hardly at all impaired. And this instrument she will surely employ, with all the energy of desperation, to retrieve her industrial and commercial prestige. There are many far-seeing people who believe that the commercial competition which will ensue between Britain and Germany when the war is over, will be as keen and ruthless as any fighting in the military campaign. We can scarcely hope to reap from the struggle any reward that will be commensurate with the sacrifices we have made, but, if in the future contest for commercial and industrial supremacy we are even to hold our own, we must be prepared to meet our rivals on level terms, equipped with weapons of equal efficiency. One of the most important of these weapons must be an adequate supply of *trained trade teachers*. When peace returns to a distracted world, it will surely be the greatest folly if we are content to slide back once more into the old slough of easy-going, slipshod methods. The problem of the training of the teacher, always important, now clamours for solution with fresh emphasis and insistence. Till a national scheme is forthcoming, we must, however, be content to make the most of the material at our disposal, and these lectures are published in the

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hope that they may do something to help the *untrained* teacher to perform his work with a new interest, with higher motives, and with more efficiency.

THOMAS J. BURNETT.

45 DALHOUSIE TERRACE,
EDINBURGH.

May, 1916.



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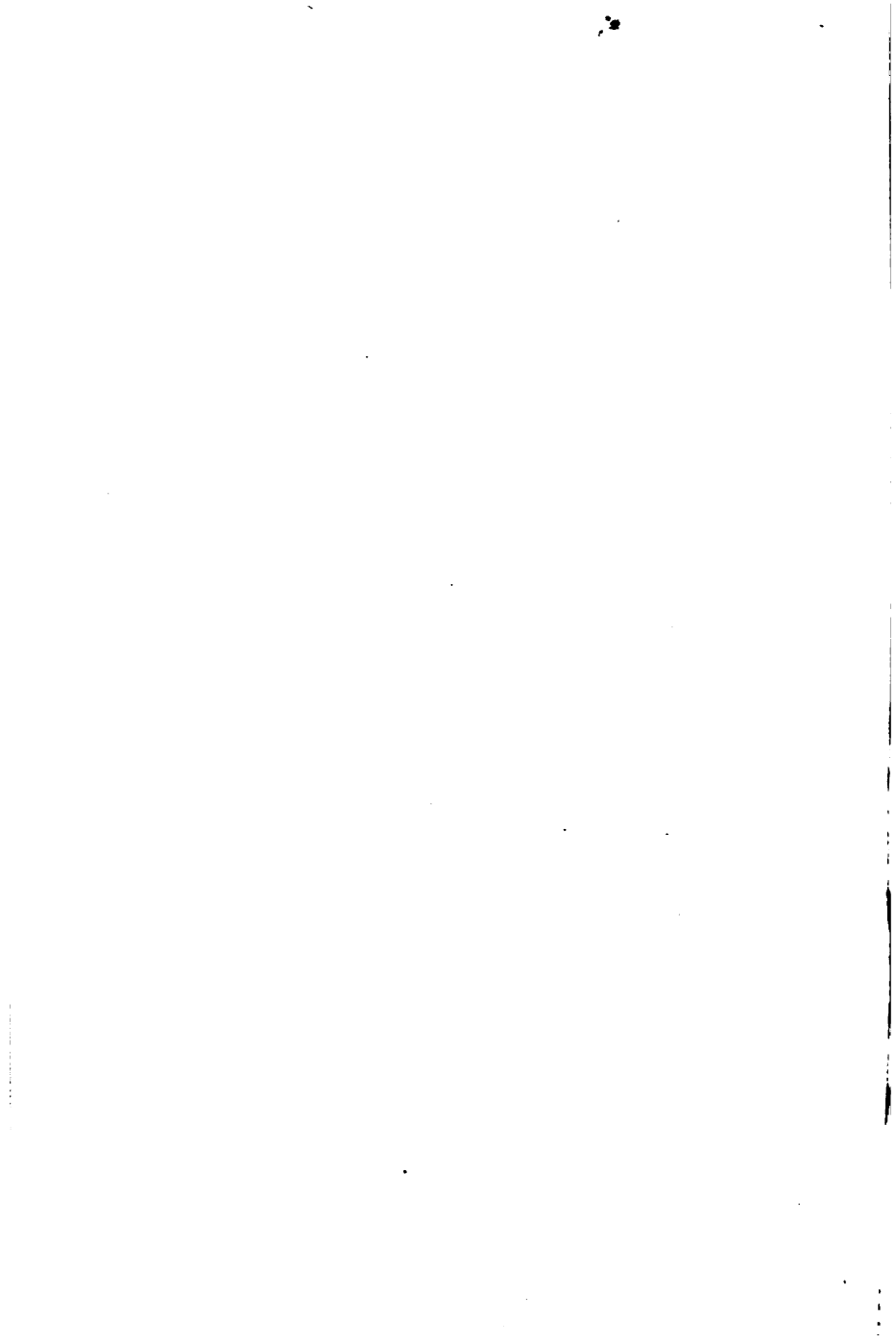
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THE ESSENTIALS OF TEACHING

CHAPTER I

PRINCIPLES UNDERLYING THE TEACHER'S WORK

THE word 'principle' is employed with so much vagueness in common speech that it may be useful to inquire at the start of this discussion into the meaning of the term. The mental world of the ordinary man is largely made up of opinions and beliefs which he has accepted for the most part without questioning and to which he clings tenaciously. Some of his beliefs he calls 'principles.' It is a common experience to hear a person say that he objects to such and such a thing 'on principle.' If you press him for a statement of his principle, it is likely that he will reply with a statement of fact that is true for himself or that is merely the expression of a personal prejudice. Again, nothing is more common than to confound the mere *rule* of conduct with the principle from which it is derived, and for this reason the two terms, rule and principle, are frequently employed as if they were equivalent.

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In a recent novel by a writer of repute, a conversation takes place between two anarchists regarding the propriety of distributing explosives to all and sundry.¹

'Do you' (says one of them) 'give your stuff to anybody who's up to asking for it?'

'My absolute rule is never to refuse anybody—as long as I have a pinch by me.'

'That's a principle?'

'It's a principle.'

'And you think it's sound?'

'Perfectly. Always. Under any circumstances.'

Here we have an attempt to justify a rule by identifying it with a principle. If it were generally allowed that it is right for anyone at any time to have the power to blow his fellow creatures into atoms, then this particular rule would find its authority in a principle. For the essence of a principle is that it is the statement of a truth that is universally held to be a truth. The man who denies that the statement is true must be regarded as an exceptional being and is usually reckoned as outside the pale of rational creatures. The anarchist in the above instance is an example of such an exceptional being because, when he asserts that his rule is based upon a principle, he affirms to be right what is universally considered to be wrong.

The essence of a principle is its truth. Because it is true it can claim what Kant called a certificate

¹ *The Secret Agent*, by Joseph Conrad.

of validity. But truth seems ever reluctant to emerge from the deep well in which she is supposed to reside, and the history of human thought shows that progress has for the most part been only a hesitating advance from the uncertain to the less uncertain. Some principles, moreover, which have had universal validity accorded to them have in the long run been proved to be invalid. For example, until three hundred years ago it was commonly *believed* that the sun revolved round the earth. Then Galileo finally established the Copernican theory and *proved* that the earth moves in its orbit round the sun. Nevertheless, to escape the wrath of the Holy Office, Galileo was forced in 1632 to make public recantation of his philosophy and to swear that the true was false and the false true. There are people to-day who find it hard to reconcile 'Joshua's sun at Askelon' with the discoveries of modern astronomical science. They consider that 'principles' for which martyrs laid down their lives are at stake.

The cases of the anarchist and Galileo furnish us with examples of the loose way in which the term principle is used. The anarchist's principle is merely the assertion of a conviction, requiring neither proof nor disproof, and having no sort of cogency for other minds. The principle of Galileo is a demonstrable truth acceptable to all rational beings capable of understanding the proof.

The essence of a principle is its universal validity. But there are different kinds of truths which are universally accepted. For example, 'a horse is a

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horse,' 'a spade is a spade' are statements which compel acceptance: it is impossible to think otherwise. A truth of this kind is called a Law of Thought.

Again, we have a body of truths universally accepted in what are known as the Laws of Nature, which are general statements of what uniformly happens. 'All men are mortal' is an example of a law of Nature. A single proved exception to such a law would destroy its claim to be a law.

We have a third class of truths in the Laws of Science which are statements of relations which are constant in any number of cases. In the sentence 'An apple loosened from the bough falls to the ground,' we have merely the statement of a particular occurrence; but when we say that 'Every particle in the universe attracts every other with a force whose direction is that of the line joining the two, and whose magnitude is proportional to the product of their masses divided by the square of their distance from each other,' we have an example of a scientific law which is always true. The test of a scientific law is that it is capable of exact formulation and can be reduced to mathematical terms. It admits no exceptions.

It is significant that we do not use the term 'law' when speaking of education. In none of the senses in which we have defined the term can there be said to be any laws in education. That is why education is so often denied the rank of a science. It has no principles which have been scientifically determined. The most ambitious term that has been

used is *institutes*—as in Laurie's 'Institutes of Education,' where it means a system of doctrines formally established. Most writers, indeed, content themselves with the term 'principles' which they use with varying degrees of precision. It is clear, therefore, that when we speak of principles in education we are dealing with truths which differ from those we have described as laws in so far as they cannot claim universal validity. They belong rather to the same class of truths as religious principles or moral principles, e.g., reverence, honour, truth, justice, freedom, &c., which form a system of generally accepted beliefs by which men more or less consistently regulate their conduct.

As a result of a particular experience we form a particular judgment, and the particular judgment is confirmed by a repetition of similar experiences. For instance, we find that in many diverse situations, the line of conduct most consistent with our own good is to respect the rights and properties of our neighbours. As a condensation from a number of particular judgments of the same kind we arrive at the general principle: 'Honesty is the best policy.' A principle of this kind, it is plain, is not subject to *proof* with the same absoluteness as a mathematical law: as a matter of fact this principle is violated every day, and our legislators make laws of another sort to enforce its observance. You will keep in mind, then, that when we speak of principles in education, we mean principles of this kind—accepted beliefs and prevalent opinions rather than proved conclusions.

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When we seek for the principles or generally accepted beliefs underlying the teacher's work, we find that there are very few about which we are likely to agree. For example, it might be supposed that there would be general assent to such a proposition as 'The teacher's business is to teach children.' But many would regard such a statement as incomplete and would require us to say 'The teacher's business is to teach children the subjects of a curriculum.' Again, according as we lay the emphasis on the child or on the curriculum, we attach ourselves to a particular school of disputants. For centuries the curriculum like a juggernaut crushed the child, and it is only within the last two hundred years—a period almost exactly covered by the lives of Rousseau, Pestalozzi, Froebel, and Herbert Spencer—that the child has in some measure entered into its kingdom. Even to-day the problem of establishing a sane balance between the rival claims dominates educational discussion.

As there is so much debatable ground these lectures can include within their survey a consideration of only a limited number of so-called principles. The three leading principles underlying the teacher's work are :—

1. The teacher's work is service for the maintenance and improvement of society.
 2. The aim of education is to make good citizens.
 3. The theory of teaching rests upon psychology.
1. *The Teacher's Work as Social Service.*—Let us first briefly consider the teacher's work as social service. The State is an organisation which has

been evolved in order to protect and to improve the established order of things which we call society. Leaving out of account the various agencies by which the State seeks to protect society—e.g., the Courts of Justice, the Police, the Army, the Navy, &c.—we may concentrate upon the means by which it endeavours to promote the welfare of its members. As the State legislates chiefly for the future, it concerns itself in the matter of education with those who are to be its future citizens. Two main agencies are employed to promote the welfare of the young—namely, the Church and the School. It has always been regarded as one of the chief functions of the Church to supervise the religious and moral education of our children, although it has usually called the school to its aid. To the school has been relegated the duty of looking after the more purely intellectual education and discipline, and it is to the specific influences brought to bear by the teacher upon the pupil in the schoolroom that the term education is commonly applied. It is in this limited sense that the term is used in these lectures.

The modern State, then, recognises as one of its main functions the education of the rising generation, and in this category we ought to include all individuals from infancy till the close of the adolescent period—i.e. the eighteenth year. In this country considerations, chiefly industrial and social, meantime limit the age of compulsory schooling to fourteen years.

For the process of education the services of a

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teacher are necessary. It is one of the criticisms directed against democratic government that in our complex civilisation there can never be any direct government by the people.¹ The actual work of government and administration must be handed over to experts who are responsible to the people and in whose efficiency the people can repose unquestioning confidence. Teachers are the experts trained by the State, for the most part at its expense, for the specific purpose of training its youth. What, then, are the responsibilities of the teacher for which he must give an account to the State? (1) The teacher is expected to impart in a masterly way such knowledge as is considered necessary for a sound education. (2) He is expected to inspire the youth of the nation with proper ideals of conduct.

When you consider all that such an obligation involves, it may be reasonably claimed that the teacher exercises a far more important function than any other expert in the service of the State. Consider the question in its moral aspect alone. We may be rather tired of hearing that the hope of the future lies in the youth of the present, but the platitude expresses a fundamental truth the significance of which should never be forgotten by the teacher who has any regard for the supreme ethical value of his work. For it must always be kept in mind that the school has the opportunity and the power to transform the character of a race. As the relation between the character of a race

¹ Prof. Findlay, *Principles of Class Teaching*, p. 91

and its dominant ideals is one of action and reaction, so the spiritual and moral worth of a nation may be judged by the kind of ideals it deliberately fosters: in other words, by the kind of education it gives to its children. And the teacher has the power to shape the ideals of youth almost as he pleases! Consider the case of Japan. Think of the marvellous change that has been wrought within the last half-century in this one-time intensely conservative people! Here is an instance where almost within a generation the character of a race has been transformed, and the work of transformation has been the work of the teacher. 'It is when we are in this region of ideals—those intangible forces that can lift a race in half a century through a greater distance than it has traversed in all preceding ages—that we realise the profound responsibilities of the teacher; for every teacher who comes in contact with the plastic material that we designate as childhood and youth can add a touch to that creative process—can influence definitely, tangibly, unerringly the type of manhood and womanhood that is to dominate the succeeding generation.'¹ This is the teacher's work as social service.

A true conception of the importance of this service imposes upon the teacher the necessity of having proper ideals and standards by which to regulate his professional conduct. The importance of the teacher's function has already been emphasised. You who are not professional teachers, but who spend most of your working hours in other

¹ Bagley, *Classroom Management*, p. 273.

callings, have yet undertaken the responsibility of taking a share in the training of youth. You have all doubtless come to the work with the fine equipment of good intentions. But in teaching, as in other businesses, good intentions, too narrowly grounded or unwisely directed, have often paved the way to disaster. More is required from the man or woman who aims at becoming an efficient teacher. Trained specialists are needed who will devote their best energies to the work. Let us consider the nature of the task you propose to undertake. The non-professional teacher represents a new type of teacher called forth by the evolution of the continuation school. The proper function of the continuation school is now being recognised, and the whole curriculum has undergone a fundamental change. In the first place, the raising of the day-school age to fourteen and the resultant increasing efficiency of the elementary schools have done away with the necessity for treating the evening schools as places merely for remedying defective education. In the second place, the continuation school is now to be regarded as a place for further education, and that education is to proceed along two main lines: (1) general, and (2) vocational. First, the *general* education of the pupil is to be extended so as to prepare him for an intelligent appreciation of his responsibilities when he attains to manhood: second, the pupil is to be provided with a better *technical* equipment for his particular trade or business.

We have at hand a large body of professional

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teachers fairly competent to undertake the general education of the adolescent. But it is a very difficult problem to devise a means of providing a sufficient number of competent teachers for the vocational training, i.e., for the trade and commercial classes. Hitherto, we have proceeded in a rather haphazard way. Teachers of these classes have been chosen on account of their practical knowledge of a special subject or craft and on account of their general superior character and intelligence. Very few have received any training as teachers and most have taken to the work, it must frankly be stated, as a means of adding a few pounds to their income.

It seems a strangely inconsistent and short-sighted policy that the State should spend so much money on the training of the elementary school teacher and yet consider it no part of its duty to provide any sort of training for the teacher of the adolescent except where it is least required—in the secondary school. When one considers what adolescence means, what tremendous changes, physical, intellectual, and moral, are involved, it is astounding to reflect how little thought has been given in this country to the question of its proper supervision. It is not sufficiently recognised that the onset of adolescence marks a stage of development in the individual life when the mental changes, although less obvious, are no less important than the physical. During this period the dull, inert boy often develops into a clever, purposeful youth: the precocious child too often crystallises

into an undistinguished mediocrity. It is during this period, too, that the emotions and the social instincts¹ have their intensest life, and there is a widening of the whole intellectual horizon. But it is when we consider the moral characteristics of adolescence that we realise how critical and dangerous is this period. The years of adolescence are the seed-time of ideals, and what sort of ideals are formed depends upon the social environment. If we can change that environment² we can modify the ideals while they are still in a plastic state, and a man's character and conduct are shaped by his early ideals.

Considerations like these will serve to indicate at least one aspect of the social service which the non-professional teacher will be expected to perform. The teachers in the continuation school must be regarded as the peculiar guardians of the adolescent. If they use their opportunities rightly, they, more perhaps than any other agency outside the home and the workshop, can influence the environment of youth and therefore its ideals, character, and conduct.

Recognition of the importance of the work demands from the teacher thorough preparation for the task he has assumed. The nature of the service also sheds light upon the type of continuation class teacher we must provide for the future. Besides being a practical expert in his own business he must have received some training as a teacher. In order that he may have the proper outlook

¹ Stanley Hall, *Adolescence*.

² Dr. Morgan, *Education and Social Progress*.

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and width of view, he should have received some instruction in the theory of education, including some study of adolescence, and in the principles of method, for without this training the average non-professional teacher fails on the following counts :—

1. From a want of knowledge of educational principles, he fails on the theoretic side. To ensure that the pupil assimilates what is set before him to learn, the teacher must be able to regard the subject from the pupil's point of view, must know his mental content so that the proper associations may be formed and growth and progress facilitated. The teacher must understand the steps of the educative process.

2. From a want of knowledge of method, he fails as a practical teacher because—

- (a) He does not keep effective discipline.
- (b) He does not know the most economical arrangements for class work.
- (c) He does not know how most effectively to break up and present his subject, nor does he appreciate the meaning of the teaching unit, nor the limits of a lesson.
- (d) He does not distinguish the important from the unimportant, nor the essential from the unessential.
- (e) He does not sufficiently repeat or emphasise the crucial points : he considers his duties sufficiently discharged and his responsibility ended if he merely lectures for so many minutes each evening.

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These are the chief shortcomings of the non-professional teacher. But it has been remarked by a good observer that the practical expert sometimes fails because he is neither sufficiently practical nor sufficiently ideal. This critic meant by the first charge that the amateur teacher from want of experience in expounding his subject is apt at first to be as much the slave of the text-book as the professional teacher who has the theoretical knowledge of teaching. There does not seem much weight in this objection because the practical man from his experience should be able to dispense with or to correct whatever is unpractical in the text-book, and there is no reason why he should do without whatever help he can get from a well arranged book. The teacher of a class in the Domestic Course, however, who allows a girl dressed in a spotless pinafore to clean a kitchen range may fairly be brought under this charge.

The other accusation is more serious. It means that the non-professional teacher has not the same ideal of thoroughness in his work as the trained teacher. He is too easily pleased with approximate results or half-finished or scamped work. If this be true it is very regrettable. Thoroughness, we like to think—perhaps arrogantly—is a virtue specifically British, owing to which, as much as to anything else, we have built up our reputation for industrial and commercial efficiency, and the non-professional teacher must look to it that he clear himself from this charge.

There is yet another weakness to which reference

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must be made. The practical expert has one defect that has its root in virtue. As a rule he is nothing if not hardworking and enthusiastic, and as a consequence is inclined to resent any interference with the smooth progress of his work. He is engaged as an expert to teach—say—Book-keeping. His period of sixty minutes is all too short for the work in hand and he is prone to neglect the routine duties imposed upon the teacher by the administrative authorities. Even the marking of a register or the filling up of a form he too often regards as a detail too trivial for attention. Yet the smooth working of the whole machinery of a school as well as its credit and reputation may depend upon the correct marking of a register. This deficiency is mentioned because it is symptomatic of as great a failing as any that the practical expert has—namely, his failure to enter into the proper professional spirit of the teacher. As soon as he becomes a member of a school staff, he must conform to the ethics of his new craft and work in intelligent co-operation¹ with his principal and colleagues.

¹ Bagley, *Classroom Management*.

CHAPTER II

THE AIM OF EDUCATION

It seems proper that non-professional teachers, who though they cannot be regarded as regulars in the great army of teachers are yet its most important auxiliaries, should know something of educational tendencies, of the aim of education. At least, they will not be content like mere attendants to follow in the track of the regulars without intelligence or with dumb incuriosity. They will seek to know how far the advance has been pushed and what is the destination.

Whither are we going? A knowledge of the goal we are striving for will affect the means by which we hope to reach it. What is the goal of education? 'We, look you, boast ourselves to be far better than our fathers,' says a character in the 'Odyssey.' But when you read the history of educational ideals and survey the maelstrom of theories that the student of education must navigate, when you find the most contrary doctrines preached in the most positive terms, you may well be excused for doubting whether in the matter of educational aim we are any nearer the truth than our fathers. 'The greatest and most difficult problem to which a

man can devote himself is that of Education,' says Kant ; and the greatest intellects of nearly all periods have tried to enunciate some theory that would harmonise with the ideals current in their time. It is precisely because ideals change that new theories of education are evolved, and there is little certainty that the commonly accepted doctrines of the age of steam and motor-cars will satisfy the idealists of the age of marconigrams and aeroplanes !

It is something to be thankful for that common sense usually rides roughshod over fine distinctions, and it may be safely asserted that the average parent does not greatly concern himself with inquiries as to ends and aims. If you ask him why he sends his child to school, he will probably answer 'to be educated.' If you inquire what he means by the expression, he will reply 'to learn lessons,' 'to get knowledge,' or, more vaguely, 'to get his mind trained.' The immediate purpose is sufficient for him, and for him the problem of the ultimate aim does not exist. Even great authorities have denied that there is any problem in education. Dr. Johnson,¹ for instance, said 'I hate by-roads in education. Education is as well known and has long been as well known as ever it can be.' The education which Dr. Johnson considered had reached its final development as a process had for its aim erudition or learning, especially classical learning. In the Johnsonian view, a man was

¹ Boswell's *Life of Johnson*, Everyman Edition, vol. i. p. 589;

educated only so far as he had learned and remembered the languages and literatures of Greece and Rome. We have travelled far since Johnson uttered his dictum in Mrs. Thrale's drawing-room. In the very year, 1775, in which Johnson expressed himself with characteristic finality, Pestalozzi at Neuhof had already made a beginning with an experiment in practical education which was to modify profoundly the practice of instruction during the next hundred years. According to the Pestalozzian view, in education far more importance should be attached to *behaviour* than to knowledge. A man's education ought to be judged not by what he *knows* but by what he *is* and what he *does*. Between the Johnsonian classicalism and the Pestalozzian pragmatism there is a full swing of the pendulum.

The whole question of the aim of education was raised by Aristotle more than two thousand years ago. As you listen to the following passage from the 'Politics,' you may well imagine yourselves in the presence of a twentieth-century controversialist. 'What, then,' Aristotle asks, 'is education, and how are we to educate? For there is as yet no agreement on the point: all men are not of the same opinion as to what the young should learn either with a view to perfection or to the best life: nor is it agreed whether education is to aim at the development of the intellect or the moral character. Nay, more: from the ordinary standpoint the matter is quite confused, and it is not clear to anybody whether we are to train in what leads to

virtue or what is useful for ordinary life or abstract virtue. All these alternatives have their advocates.'

It is hardly an exaggeration to say that there is as much diversity of opinion to-day concerning the question of aim. Indeed, the terms in which Hume¹ described the state of metaphysical science in his time may appropriately be applied to the present day state of education. 'Even the rabble without doors may judge from the noise and clamour which they hear that all goes not well within. There is nothing which is not the subject of debate and in which men of learning are not of contrary opinion. The most trivial question escapes not our controversy, and in the most momentous we are not able to give any certain decisions. Disputes are multiplied as if everything were uncertain: and these disputes are managed with the greatest warmth as if everything were certain.'

Enough has been said to suggest the extreme instability of educational doctrine. Still, most people believe in education of some sort or other. The difficulty is that when we use the term we may mean by it very different things. In its widest sense a man's education may be said to begin with the beginnings of life and to come to an end only when the breath leaves his body. Even in its restricted sense of a *school* education it has various meanings. Some people use the word to mean technical training and nothing else—a course of study to fit a boy or a girl for some particular vocation. If a school does not turn out competent

¹ Quoted by Dr. Rusk, *Experimental Education*.

clerks or competent cooks, or whatever the particular trade may be, the education which it provides is condemned. That is one extreme. At the other extreme, there is a class of people who regard education simply as a means of producing a man of a certain type of mind and breeding which we associate with the idea of culture. The persistent pressure of environment gives this young man the Oxford 'touch,' that young lady the Girton 'manner.'

These are examples of extreme views, but most of the current discussion concerns itself with one or other of the following aims :—

1. The Vocational Aim.
2. The Knowledge Aim.
3. The Moral Aim.
4. The Social Aim.

Other aims which may be mentioned are the Culture Aim, the Harmonious Development Aim, Herbert Spencer's Complete Living Aim, the Self-Realisation Aim, &c. There are as many aims indeed as there are educational theorists—not to speak of faddists. It is outside the scope of these lectures to consider all the aims we have mentioned. Some of them are of merely philosophic interest and shed little light to guide the steps of the practical teacher ; but the four aims we have enumerated above have had most influence in shaping contemporary educational policy and may be briefly reviewed.

THE VOCATIONAL AIM

There is a splendid definiteness about the vocational aim—a definiteness well expressed by

another name which this aim sometimes gets—the Bread-and-Butter Aim! To provide a human being with the means of gaining a livelihood! It is certain that the majority of parents who ever consider at all why they send their children to school would vote outright for an aim like this that seems so tangible and realisable. Powerful arguments,¹ moreover, can be marshalled in its favour. Its motive may be utilitarian, but there is no sordidness in true utility. The pragmatic test of any truth is its usefulness.² The aim may be only the betterment of the individual; but this does not imply that it is merely selfish or unsocial. It may be conceded that the aim is narrow; but if the purpose is to enable a boy to become a more efficient workman than his father and so to spend his life under better conditions, then from this standpoint the vocational aim must be commended. It might be urged that a mere bread-and-butter ideal pushed to an extreme implies purely vocational training from the earliest years. In justification it might be replied that in a competitive age we must adjust our education to the needs of the day; we cannot afford to take long views: what we want is quick returns and tangible results.

It must, however, be borne in mind that life is an infinitely greater thing than the mere trade or business that provides the wherewithal to live, and it is for life in all its complex aspects and with all its chances, changes, and adventures that

¹ Prof. Darroch, *Education and the New Utilitarianism*, p. 4.

² William James, *Pragmatism*.

we must prepare the child. He must be trained to adapt himself both to the physical and to the social environment. He must be taught to work, but his education will be very narrow and inadequate if it fails to make him realise his place in the social fabric and his obligations to his fellow men. For this purpose the child must receive what is called a *liberal* education: that is, an education free from any obligation to train for a special calling or profession, and aiming solely at fitting the individual for the understanding and enjoyment of life. Such an education will include instruction not only in the story of the past as unfolded in history and literature, but also in the activities and tendencies of the present day as illustrated by the triumphs of science, the progress of industry, and the constitution of society.

The great defect of the vocational aim lies, as Bagley¹ says, 'not in its objective results, but in its subjective tendencies.' It tends to produce a narrow outlook and a conservative, non-progressive attitude of mind. Moreover, its short-sightedness defeats its own ends, for it does not produce the broadminded, efficient workman who can readily adapt himself to the changing circumstances of the industrial environment. This is a vital consideration in an age of ultra-specialisation and minute division of labour.

'Life is the trade I would teach him,' says Rousseau of Emile. 'Tis not a soul, 'tis not a body we are training only,' says Montaigne, 'but a

¹ Bagley, *The Educative Process*.

man, and we ought not to divide him.' When we train a man under a bread-and-butter scheme of education, it is like turning him into a single nut or screw of a machine, forgetting that a man is a complete machine in himself—and a machine with a *soul*! The vocational aim does not, then, furnish us with any satisfactory principle: it expresses only one aspect of the truth.

THE KNOWLEDGE 'AIM

It is a common mistake to identify education with 'learning.' By learning is meant an accumulation of that sort of knowledge which is not generally known and which can be got at second hand from books or from the instruction of a teacher. The 'learned' person is held in profound respect as one 'who knows a lot,' and the more his knowledge is divorced from ordinary experience the more learned he is esteemed. 'The knowledge of that which is before us, or about us, which appeals to our experience, passions, and pursuits, to the bosoms and businesses of men, is not learning. Learning is the knowledge of that which none but the learned know' (Hazlitt).

This ideal of bookish learning has long dominated the school, and he has been commonly regarded as the most successful teacher who turned out the greatest prodigies of learning. The schoolmaster—himself the product and embodiment of such learning—has by virtue of his office been the most important factor in perpetuating the tradition; he must not, however, be held as primarily responsible,

but rather the conditions under which he undertakes the work. Often holding other views and attaching other values, he has yet been compelled to sin against the light and to conform to the public judgment which authorises the kind of education to be given in the school. It is still the custom to offer the largest rewards—the best posts in the service of State and Church, the best remuneration and the highest dignities—to those pupils who have that kind of ability which enables them to make brilliant passes in examinations which are set as a test of a classical or bookish education. Schooling surely should be a preparation for life and not for examinations. But what a travesty of education do we see in our day when it can still be said of many of our schools that they prepare their pupils for examinations and handicap them for life! As long, however, as the public estimation of a school is based upon a few conspicuous successes in bursary and civil service examinations, rather than upon a just assessment of its average output, so long will the schoolmaster be tempted to pander to the popular demand and to advertise his wares. When will the public realise that because a farmer drives *one* fat pig to market, *all* the pigs on his farm are not fat!

Yet while the cult of the head is in no wise neglected, the necessity of developing *all* the aptitudes of *all* our pupils is being more and more recognised. The spirit of Browning's words inspires our age:—

Make no more giants, God,
But elevate the race at once.

For the elevation of the race a common measure or standard of equipment and attainment is necessary. What facts of life or experience go to form this standard knowledge? Knowledge that does not at least subserve some useful purpose may be regarded as useless lumber. It may of course be argued that all knowledge has been determined at some time by practical standards—that is, has been of use to some one at some time or other; but it would be absurd to contend on that account that each individual should make it his aim to acquire during his lifetime the total experience of the race. No one can make the whole world his province.

If we are to teach only such knowledge as is valuable from the standpoint of utility it is clear that a careful selection of material must be made, and corresponding to the varieties of material selected there will be different types of education. We have accordingly two main schools of educationists. The modern school attaches more importance to the content of instruction than to the form, while the classical or traditional school emphasises the form rather than the content. While both schools would probably agree that their aim is the same—namely, to develop the powers of a boy or girl to the highest point of which they are capable and to give them the means of knowing ‘the best that has been said and thought in the world¹’—they propose for this purpose different *media* of instruction. The reformers insist that

¹ Arnold's definition of ‘culture.’

the educational value of anything that is real and present and pertinent to the circumstances of our day is infinitely greater than that of anything artificial or formal, whatever efforts of memory or other mental gymnastics are required for the latter. The formalists on the other hand argue that a classical education is, in the long run, the most useful of all, because it so develops and strengthens all the powers of a man that, whatever his chosen career may be, he is most likely to perform his special duties with the most efficiency. The question at issue is sometimes discussed as if there were some analogy or correspondence between the construction of a ship and the development of a mind. The one side insists that in designing a ship the nature of the cargo¹ to be carried should be the paramount consideration. The other party argues that, provided the vessel be solidly built and equipped with adequate driving-power, she may safely be entrusted to accommodate any cargo. The matter would seem to be essentially one for settlement by compromise. The sensible designer will keep both points in view, for cargo and driving-power are mutually dependent. No one would equip a Dreadnought with the horse-power of a drifter.

In estimating the constituents of the standard knowledge that should form the mental equipment of the average educated person, it seems clear that a balance must be struck between the claims of utility and culture. If the motive of

¹ Thistleton Mark, *Modern Views on Education*.

culture is predominant and the care of the schoolmaster is directed towards the inculcation of thoughts, imagery, abstractions, verbalism, and philosophy, the nation so educated cannot expect to compete successfully in the arena of industry, science, and practical politics. If on the other hand the schoolmaster teaches only 'useful' knowledge and neglects those studies whose aim is to add refinement and beauty to life, he becomes the most potent agent in reducing the intellectual life of a nation to the lowest plane. Culture and utility, then, should not stand in any antithetical relation to each other, but should rather be regarded as complementary factors in an adequate education. It would appear that what we want is a compromise between the vocational aim and the knowledge aim. It will be found, too, that as in theory these aims are not contradictory but complementary to each other, so in practice they work harmoniously enough. It is in fact a compromise between these two aims that determines the curriculum of the continuation school whose function is to provide, *first*, an extended general education—the aim of which is to turn out good men and enlightened citizens; and *second*, a technical education aiming at producing efficient workmen. These two lines of development correspond to the two aims we have just considered.

THE MORAL AIM

We come next to consider the moral aim. A man may be an efficient workman and an

intellectual genius and yet may not be an altogether desirable acquaintance. A burglar or a forger is often a most efficient workman as well as a clever rogue, but no one has yet had audacity enough to assert that the aim of education should be to turn out burglars or forgers. Fagin's training of the Artful Dodger in 'Oliver Twist' was from Fagin's professional point of view a great success, and Fagin's method might be fruitfully recommended to all practical teachers. That method is founded on psychological principles of prime importance—namely, frequency of repetition and organisation of experience. Fagin's aim being to produce an expert thief, the method adopted was excellent; but it was an excellent method used for a bad purpose. Fagin's aim was anti-social, and therefore immoral. An aim, then, that limits itself to practical and intellectual efficiency is found wanting. As the whole fabric of society rests upon a basis of moral obligation, it is generally agreed that moral efficiency, including the development of those virtues of which the moral character consists, should form part of the standard equipment of the educated man. The difficulty is to arrive at any sort of agreement as to what constitutes morality or moral efficiency.

Aristotle was the first to argue that the end of education should be the development of the moral character, but it was left to the German philosopher, Herbart, to give to morality a definition that can be accepted by the practical educationist. Since Herbart's time (1776-1841) the doctrine of evolution has revolutionised ethics, but Herbart's

conception of the meaning of morality is the one still generally accepted. According to Herbart, morality is an effect of the 'good will': the good will being 'the steady resolution of a man to consider himself as an individual under the law which is universally binding.' What is meant by morality is the control of primitive impulses, inherited from our ancestors and inherent in our natures, by the will responsive to the suggestions and stimulus of higher ideas. We are not born moral beings, but only as the result of a long and complex training we may become moral beings. The process of attaining to morality—the long and complex training—is called education. 'Education,' Herbart says, 'may be summed up in the concept morality.'

THE SOCIAL AIM

The social aim carries us a stage farther, and may be regarded as a development or restatement of the moral aim. One of the main contributions which the doctrine of evolution has made to ethics has been to emphasise the close relation and interdependence of the terms 'moral' and 'social.' As it is impossible for a man to live and develop without the goodwill and co-operation of his fellow men, so a man cannot be moral in himself but only in relation to others. The essence of any moral action is its social reference. We thus arrive at the conclusion that the development of a socially efficient¹ individual is the ultimate aim of education.

¹ Bagley, *The Educative Process*.

While the other aims which we have considered are true, so far as they go, we seem to have found in social efficiency a unifying principle. The various aims coalesce and harmonise in the social aim ; but each, it must be noted, requires the aid and concurrence of the others towards a complete development. Every efficient member of society must satisfy three conditions which may be regarded as the meaning and tests of ' efficiency ' :—

First, in order not to be a drag upon the community to which he belongs, he must be able to earn his own living.

Second, in order that he may have a proper understanding and appreciation of the world in which he lives, he must attain to a certain standard of intelligence and knowledge.

Third, in order to fulfil his obligations to his fellow men, he must conform to a certain standard of conduct which we call the moral standard.

The continuation school, then, must attempt to satisfy the demands of social efficiency. It must seek to develop the powers of its pupils to the highest point of which they are capable, so that they may be able to make the best use of life and to serve efficiently the community to which they belong.

The question with which we started this chapter—namely, What is the aim of education ?—seems to be answered by the statement of the social aim. But it may be objected that the social aim leaves out of account the *spiritual* needs of mankind. The social aim implies that we should love our neighbour as ourselves, but altruism is not the whole sum

of the Commandments. An aim which does not require of us to love and reverence God cannot be regarded as adequate or final. Moreover, an education that has no redemptive or regenerating power, that fails to direct the energies and aspirations of men into spiritual channels, lacks the highest inspiration. So much will be granted. But you will remember that education, as defined in our first lecture, means for us only the specifically organised influences of the school, and these influences have their main reference to practical and social ends. At the same time every teacher, in addition to inculcating in his pupils ideals of service and charity, will seek to give to his teaching at every stage a spiritual atmosphere. It is hardly possible to be more definite than this. As it was difficult to define the moral aim, so at our present stage of spiritual development it is impossible to state a definite 'religious' aim with which there will be any general agreement. In relation to 'religious aims' the teacher must adopt an attitude of detachment, and education in its exercise of a wise and wide tolerance must be content in the meantime to play the part of the soul in Tennyson's 'Palace of Art':—

I take possession of man's mind and deed,
I care not how the sects may brawl,
I sit as God holding no form of creed
But contemplating all.

CHAPTER III

THE THEORY OF TEACHING RESTS UPON PSYCHOLOGY

WE have been considering the question of the ultimate aim of education, but the laws upon which educational practice is founded have nothing to do with ultimate aims. As the teacher's main task is to train minds, the laws underlying the practice of his art must be derived from the science which treats of the nature and development of mind—namely, psychology. To the teacher who is to have a proper understanding of educational problems, the importance of the study of psychology can hardly be overestimated, because psychology furnishes him with the only standpoint from which the educative process can be correctly judged—that is, the standpoint of the pupil. We have not time to dwell upon the great intrinsic value which psychology possesses as a discipline, or to emphasise sufficiently its importance as the only correct mode of thought for anyone who seeks to instruct and train other minds. The scope of these lectures will not allow of anything like an adequate treatment of this fundamental principle. You must in the meantime be content to accept a statement of the psycho-

logical principles with which all valid principles of teaching must conform. But you will always keep in mind that psychology bears the same relation to method, or the principles of teaching, that method bears to the *art* of teaching: that is to say, psychology is regulative. You should therefore seek an early opportunity of increasing your knowledge of psychology by reading and digesting some elementary book on the subject. The perusal of such a book as James's 'Talks to Teachers' will surely tempt you to a more serious study of a subject that forms the basis not only of educational but of every social science. But you ought to be warned that no matter how elementary your study of psychology may be, you should be careful to make that study, so far as it goes, a real one. It is fairly easy to acquire a superficial mastery of the psychological 'jargon,' but unless from the start you learn to 'psychologise'—that is, to observe closely and to describe accurately the changing phases of your own mental states and to compare your own experiences with those of others, the technical terms employed by the science will be empty of content and are likely to be a mere cloud of words. There is a real danger that psychology, unless approached by the methods of introspection and experiment, may be more obstructive than helpful to the study of education.

FIVE FACTORS OF MENTAL GROWTH

You will agree that any experience or piece of knowledge that is to form an effective item in the

equipment of a mind—that can be used, for example, in forming a judgment or making a statement—must be capable of being revived or recalled. You must, therefore, admit that the factors which form the *conditions* of revival are supremely important from the teacher's point of view. It is these 'factors of efficient recall' which are to be emphasised in these lectures as the psychological principles underlying all sound teaching. A just appreciation of the fundamental importance of these factors and an adequate insistence upon securing the proper conditions under which they may efficiently operate in the class-room are of vastly more moment than any acquaintance with mere teaching rules and devices.

The ability to recall any fact or experience depends upon certain conditions under which the experience is acquired. Investigation has shown that these conditions are five in number, and in ascending order of importance they stand as follows :—

1. The Recency of the Experience.
2. The Primacy or Novelty of the Experience.
3. The Frequency of the Experience.
4. The Vividness of the Experience.
5. The Associability of the Experience with other related experiences.

The first three, viz. recency, primacy, frequency, are temporal attributes of experience ; the fourth, vividness, refers to the *quality* of experience, and together with one or other of the first three will describe any simple experience. The fifth condition, associability, transcends all the others in

importance. While the other factors are mainly concerned with the simple elements of consciousness, association or organisation is concerned with the *thought connections* between related experiences and does its work on the higher planes of judgment and reasoning.

(1) *Recency*

The more recently you have learned anything the more likely you are to be able immediately and completely to recall it. With this statement you will all agree. It is often very helpful to a candidate to 'refresh his memory,' as we say, by running over his notes before entering an examination-room. That is quite a justifiable use of the principle. But the factor of recency may be used to a bad purpose in education. For instance, it is this principle that underlies the system of 'cramming' for examinations, and, when so abused, is subversive of the true purpose of education as training, and invalidates the claim of the written examination to be a method of testing *efficiency*. For you, as practical teachers, *the significance of recency as a principle lies in the value of reviewing at the close of a lesson the points which you desire to emphasise and which will form the point of departure for next day's lesson.*

(2) *Primacy or Novelty*

Everybody acknowledges the power of first impressions. We fall in love 'at first sight'; first impressions are proverbially 'lasting'; the

new thing or the fresh development 'catches the attention.' For the teacher the importance of this principle lies in the power of the new or novel experience to arrest the attention. It is obvious that this principle unless properly controlled may prove detrimental to good teaching. A too novel experience—that is, one unrelated to any preceding experience or to the subject under discussion—may only serve to *distract* attention. To be properly used, *this principle involves on the teacher's part thorough preparation and careful selection of material. Care must be taken to present either the new material in an old setting or the old material in a new setting, according to the purpose in view.*

(3) *Frequency*

A great deal of psychology is implicit in common speech and familiar expressions, and when we say 'Practice makes perfect,' we are bearing testimony to the efficacy of frequency as a psychological condition of effective teaching. Indeed, of the three temporal attributes of experience frequency or repetition claims the teacher's attention as by far the most important. Up to a certain limit which may be called the threshold of saturation, the oftener an impression is repeated the more familiar we become with it, and no real advance in any study is possible until we have made certain by frequent revival that we have thoroughly mastered the previous stages. The classical expression of this truth is 'Repetitio mater studiorum': repetition is the mother of learning.

Repetition lies at the basis of all habit-forming, whether on the low plane of physical adjustment or on the high plane of ideals, and the formation of right habits, physical, intellectual, and moral, may be accepted as the aim of education in so far as only an individual of right habits can be considered socially efficient. But in regard to your own work as teachers of shorthand, typewriting, &c.—subjects taught for their utility rather than for any educative value they possess—consider the importance of repetition as a factor in reducing to the automatic level processes which at first absorb the learner's whole powers of attention. Herein lies the significance of repetition as a factor in the evolution of consciousness: as soon as a habit operates mechanically, the mind is set free for fresh adjustments and developments.

It is probably the most serious defect of the inexperienced teacher that he fails to realise the importance of repeating and, by repetition, of emphasising the salient and essential points of his lesson.

(4) Vividness

Comparing sensations of the same quality, we say that one is more *vivid* than another. For example, a taste may be 'sweet' or 'very sweet,' 'slightly bitter' or 'very bitter'; a colour may be a 'dull green' or a 'bright green.' This gradation in intensity is what we mean when we speak of the *vividness* of a sensation. A low degree of intensity means little vividness; a high degree means great vividness. As far as teaching is

concerned, vividness means brightness, emphasis, lucidity; in contrast with dullness, monotony, obscurity.

It is a matter of commonplace knowledge that we remember best what has been most vividly presented. A display of fireworks or a fine sermon makes a 'deep' impression upon our minds. This factor of vividness is therefore extremely important in education. It has its reference both to the manner of the teacher and the material of the lesson. It is not meant that the teacher in order to arrest attention should employ theatrical or spectacular methods; but the manner and bearing of a good teacher is at all times alert, earnest, purposeful, and his speech clear, incisive, emphatic. His matter will be carefully chosen, his definitions concise and correct, his illustrations apt and illuminating.

We shall have more to say about these four factors, especially vividness and frequency, when we come to deal with the problem of interest. In the meantime you are asked to consider them as essential factors in all good teaching.

(5) *The Organisation of Experience*

We have already stated that the fifth condition under which we are able to recall experiences—namely, the associability of experiences—transcends the others in importance. If you will reflect a little upon what happens in your own mind, you will see at once that the power of any fresh experience to revive any former experience depends

greatly upon the simple or primary factors we have just considered. For you will agree that a certain new experience is likely to recall some former experience that was either recently or vividly or repeatedly or, it may be, uniquely, felt. But the recency, vividness, frequency, or novelty of the earlier experience does not explain why that experience should be specially selected for recall. Other factors come into play.

THE LAWS OF ASSOCIATION

Let us take an example. In my next sentence I shall pronounce a name, and I wish each of you to attend closely to the idea which the mention of this name will immediately revive in your mind. Suppose I say—Marne! What images or thoughts has the mention of this name recalled to you? A different image, very likely, for each of you. Pink editions of the evening papers? A dead friend? Peaked helmets? The Kaiser? Kitchener? Waterloo? Mukden? It is impossible to predict what the immediately succeeding thought will be in any individual case because the result depends upon the texture of each individual mind. But let me consider my own case. To me the name Marne suggested Mukden. How can I account for this result? Mukden was certainly a great battle of fairly recent occurrence which I can recall with some degree of vividness. Was it, then, the vividness of the impression made upon my mind some ten years ago which served to recall Mukden rather than, say, Kirk Kilisse—an

event certainly more recent and quite as vivid? The factors of recency and vividness doubtless operated in helping to recall Mukden, but I am able also to distinguish a connection of *similarity* between the two events. First, they were both *battles*; second, they were both exceptionally *long drawn-out* battles; third, they were both distinguished for the immense number of combatants engaged; fourth, the names are alliterative. These are some of the reasons why I think in my case the Marne recalled Mukden. But notice that I did not *think out* these similarities before the recall took place: the recall seemed to be instantaneous and spontaneous. I may not be able to explain satisfactorily *how* the recall took place, but it did take place I am fairly certain because of certain similarities in the two events. |

Here, then, we have a factor of the greatest importance in considering the organisation of experience. *Similar experiences tend to recall each other*; or, in popular language, similar ideas *suggest* one another. Should there be a choice of exactly similar experiences it is impossible to foretell whether it is the most recent or the most vivid or the most familiar experience that will be recalled. But other factors—e.g. vividness, frequency—being equal, it seems probable that the most recent experience stands the best chance of revival. Had Kirk Kilisse, for instance, been a battle of exactly the same character as Mukden, Kirk Kilisse would probably have been recalled rather than Mukden, simply on account of its greater recency. As a

matter of fact, I remember that I read a very vivid description of the battle of Mukden not long ago.

As a special case of suggestion through similarity, you will possibly agree that strongly *contrasted* experiences may suggest one another. For example, black is likely to suggest white ; day, night ; joy, sorrow ; the rule, the exception ; comedy, tragedy.

But similarity is by no means the most common or most usual form of connection between experiences. Suggestion through similarity as a mode of connection is a mark of the more highly developed mind. In its subtler manifestations it distinguishes the poets, the inventors, the original thinkers from the ordinary ruck of human kind.

The commonest form of connection is a simple *time* or *place* connection. In our Marne example you can plainly distinguish the temporal or spatial elements. The mention of George I is likely to recall George II and a succession of Georges. William I may recall William II and so on. William the Conqueror, however, is more likely to recall Normandy or Hastings. Kitchener may recall Khartoum ; the War Office, Sir John French, &c. The Marne recalls Waterloo because the two battle-fields are situated in the same corner of Europe. It sometimes happens that you meet some one in the street whom you feel you ought to know but whom for the moment you fail to 'place.' You ask yourself 'Where have I seen this person before?' Suddenly you remember the scene of introduction, and as soon as you have reconstituted the setting of the meeting you may

remember many details about your acquaintance. Again, in teaching the geography of a country, a place is more easily remembered if it has some interesting historical association. Spain and the battle-fields of the Peninsular War, Belgium as the cockpit of Europe, will supply you with numerous illustrations. This principle of connection is known as the law of *association by contiguity*, and means that *objects which have been experienced together tend to become associated in the mind, so that when any one of them is thought of, the others stand a good chance of being recalled along with it.*

While the principle of contiguity may be employed with very great advantage in helping to connect experiences which are important in themselves or which the teacher has predetermined must be joined in a linked sequence, it must be noticed that it is not the contiguity itself which makes the experiences important. Association by contiguity may be a dangerous principle in teaching. It is responsible, for instance, for a great deal of wasted time in the schoolroom. One of the worst faults of the inexperienced teacher is what is known as the 'omnibus' question. A young teacher is sometimes called upon to teach what is known as an 'object lesson.' Her lesson is to be on, say, coffee. She thinks that an ingenious 'introduction' will be to ask the pupils 'What did you have for breakfast this morning?' Trusting to luck rather than to skilful guiding, she hopes that the class by a simple enumeration of all the possible articles of diet may sooner or later hit upon the desired

beverage. Her relief is great if at an early moment some pampered pupil mentions coffee. Too often, however, it happens that she is forced by failure and desperation to ask 'Have none of you ever tasted *coffee*?' She has relied upon mere contiguity to 'elicit' the expected answer. The result would have been attained much more quickly and certainly had the teacher employed suggestion by similarity and asked: 'Instead of *tea*, what does your mother sometimes give you for breakfast?' Better in most cases no 'introduction' at all than one which relies wholly upon contiguous association. When employed the contiguity should be so close that the desired answer is inevitably suggested.

Again, contiguity is the main cause of irrelevant or tangential teaching. The teacher who has the habit of making 'asides,' or who is apt to ramble in the course of his lesson, has his mental processes mainly governed by this principle, and his unfortunate pupils may be considered his victims. Who, at some time or other, has not been distracted to the verge of exhaustion by the irresponsible vagaries of a disjointed volubility? Flora Finching in 'Little Dorrit,' and the Nurse in 'Romeo and Juliet,' may be cited by way of illustration, but the type of mind represented by the egregious Flora may be met on every street at any hour of the day. The Flora Finchings of this world are the product of an education conducted too exclusively under the law—or licence—of contiguity. Let me give an example of how

the principle works. You can imagine a conversation somewhat like the following being carried on in many a drawing-room where the 'atmosphere' might even be considered 'educated':—

... 'Dear Mrs. Jones, pray excuse me, but I do so much admire those lovely cups of yours ! What a pretty design ! Aren't the rose-buds charming ! They remind me of John's rambles. You know our gardener, John ? Have you heard that his son has been wounded in Flanders ? Aren't those German soldiers savages ? And the Kaiser ! Do you know I have just been reading a book which proves he's *mad* ! And that reminds me. Have you read Marie Corelli's latest ?' &c., &c.

In the most irrelevant garrulity it is always possible to trace some thread of connection : in our example the thread which makes the chatter intelligible is supplied by the words : cups—rose-buds — gardener — son — Flanders — Germans — Kaiser — book — Marie Corelli. Contiguity is thus seen to be the main psychological basis of that undirected, irresponsible tittle-tattle which we call gossip. As such we ought, I suppose, to be truly thankful for it, as it provides relaxation from the strain which is understood to attend the higher processes of thought. Besides, so long as any thread of connection is discernible at all, we may even derive some measure of enjoyment—if not of instruction—from such a conversation as we have described. It is only when we get jolted at unexpected crossings and shunted into innumerable side tracks that we writhe in torment during our

unhappy journey ! But when the points are not too often closed and the line runs fairly clear ahead we rather enjoy the experience, though we know not whither the train will carry us. In the instance given above, when our good-natured gossip started to praise her hostess's china, neither she nor her victim could foretell that her eulogy would terminate in a castigation of Corelli !

Instances of the important part which contiguity plays in directing mental processes will occur to each of you. One of the most fascinating of all books is a dictionary. You open it in search of a word. As you turn over the pages, your attention is attracted by some strange word. You read the synonyms and cognates of the new word. These in their turn set you on the hunt after other words and thus you proceed — like beagles starting a new hare in every cover, like ill-trained beagles following each fresh scent, not always hunting down your original quarry ! Consider, also, the tenor of any ordinary conversation. How seldom is there any sustained argument ! How rarely is any subject pertinently discussed for any length of time ! In the course of an evening's talk we may range over the whole discussible universe, review all things in heaven and earth, driven by a few chance words from China to Peru ! Even our commonplace thoughts are seldom independent— but 'mere echoes of the book *last* read.'

It would seem from what has been said about association by contiguity that we are entirely at the mercy of our associated ideas. If this were

true we could scarcely be held responsible for our personal actions. Uncontrolled association, it seems probable enough, might lead us all as madmen to the asylum, or as criminals to the jail, or to the hangman's rope. Nor would I be able to finish this lecture or this book with any coherence or relevancy if I were a mere passive agent entirely in the power of my associated ideas. If I am able to complete my task it is because I have some power of controlling my associations with reference to a definite end which I have in view: in other words, because I have an idea of a *purpose* to be achieved and a *will* strong enough to achieve it. Happily for us if we are mostly 'fated' we are also partly 'free.' It is possible for us, to some extent, to control our associations: we *do* have some say in directing the trend of our thoughts. We *can* neglect those ideas that seem inimical or extraneous to our purposes, and we *can* attend to those that seem likely to farther our profitable aims and interests. Indeed, the aim of education might be formulated in terms of association. From this point of view the aim of education would be to form in our pupils organised systems of useful associations—that is, of such associations as have social value or are likely to be profitable to the pupils themselves and to the community which they will one day serve.

We have seen that most of the ideas of the ordinary pupil come to be associated together by contiguity—that is to say, by the objects, which are the sources of the ideas, occurring together some-

time, somewhere. These ideas are impressed or fixed in the mind by the recency, novelty, frequency or vividness of the stimuli and by the pupil's own will and selective interest. We have emphasised the importance of forming only useful associations in our pupil's minds. It remains to inquire what are the associations which may be described as useful. Leaving out of account in the meantime the associations that are formed through suggestion by similarity and the ordinary associations of the concrete world which are formed by the operation of the five senses, by far the most important of our associated ideas—because the most useful—are those derived from the *causal relation of things* or, more simply, from *cause and effect*.

CAUSALITY AS A FACTOR OF ASSOCIATION

The associations which we derive from the causal relation of things, or from causality, are those which have the most significance for us as determinants of conduct. They serve as *cues* prompting and guiding us in all our most ordinary actions. For example, any morning before I leave home for business, I may hesitate whether I shall take an umbrella or a walking-stick. I glance at the barometer or have a look at the sky. If I see that the glass is high and steady and the sky clear, I choose the walking-stick. Why? Because many previous experiences have taught me that a high barometer and a clear sky are fairly reliable *signs* of a fine day; on the other hand, a low barometer and cloudy skies are signs of rain. Again, suppose

I am walking leisurely towards a station to catch a train and see the signal fall, I at once quicken my pace. Why? Because previous associations formed between the ideas, train and signal, have taught me that the fall of the signal means that the train is coming and that I must hurry if I am not to be left behind. Once more, suppose I make arrangements to go a-fishing on the morrow. If I discover when I awake that a cold east wind is blowing, I shall probably stay in bed. Why? Because previous experience has taught me that east winds and empty baskets usually go together.

You will agree that the foregoing are examples of *useful* associations. They allow me to form judgments which determine my line of conduct. Compare them with the ordinary associations formed by mere contiguity: e.g. the ideas which cluster or combine to form *my* idea of the reading-desk I am now using—a plane, inclined, square wooden board standing on a single leg; or, if you like, the cluster of associated ideas which I have formed in connection with this room—desks, students, demonstration-table, &c. These, too, are directly useful associations as they enable me to make the best disposition of my time and means for conducting this class. Compared with ideas which are causally connected, however, they have two aspects which distinguish them. First, the objects to which they correspond exist contemporaneously—they are all in this room *now* or at the same moment of time; whereas, with ideas which are causally connected the object or event

which we call the *cause* must precede the object or event which we call the *effect*. The effect, we say, follows the cause. (You might consider whether it would not perhaps be better to regard cause and effect not as two separate events but rather as *two aspects* of the one event. The cause merges into the effect. From this point of view, the cause may even be said to include the effect as a fertilised egg may be said to include the chick.) Second, with ordinary contiguous association there is no *necessary* order in which I am bound to connect the ideas in my mind: the ideas may present themselves in an arbitrary fashion, in seemingly any order; whereas with ideas causally connected I am under the necessity of thinking them in the same inevitable sequence—that is to say, from cause to effect, or from effect to cause.

If you are speculatively inclined, you will find it interesting to consider this question of the *necessity* of the causal relation. You need not accept any opinion regarding it, for even amongst philosophers the law of causality has proved a very Serbonian bog of controversy. Some, like Hume, deny any necessary connection between any given cause and effect—they see merely the same customary connection which is formed in ordinary association. Kant, on the other hand, postulates the necessity of the connection between cause and effect.

Leaving aside the question of the nature of causality as a matter of merely metaphysical interest, I wish to emphasise the importance of the law of causality as a third law of association

which it behoves you as teachers constantly to employ in organising your pupils' knowledge or in training their minds. We have already insisted upon the importance of associations which have this bond as useful associations. They are only useful, however, *if they are used*, and it ought to be one of our main aims in teaching to get our pupils to make use of causal associations. For one of the signs that distinguish a sensible person from a fool and the scientific mind from the unscientific is the degree in which one or the other makes habitual use of causal associations. We all form them, foolish and wise alike: we cannot escape doing that. It is a pity that most of us do not make a better use of them in the ordinary transactions of life. Even the most prudent amongst us sometimes takes a walking-stick when the portents plainly declare for an umbrella; we have all lost trains in spite of warning signals, and a keen angler will try his luck on the most impossible days.

It will not suffice for the teacher who is attempting to form a causal association in his pupils' minds merely to point out the relation of the ideas and to impress this relation by means of vividness, frequency, &c. He must strive to make the relation as clear and explicit as he possibly can. He must carefully analyse the so-called cause into its various elements, for very few causes are simple facts. Mostly causes are complex facts; but as a rule among the constituent elements of any cause there is one which uniformly or unvariably produces the effect which we may be considering, or at

any rate the main features of the effect. This is commonly accepted as *the* cause, or the main cause, and is said to *explain* the effect. For example, the European War at present waging cannot be said to be the effect of any one cause. To the unreflecting mind, or to the mind easily satisfied in its search for a cause, the assassination at Sarajevo or the Austrian ultimatum to Serbia may stand as the cause of the war. To others the cause is more deeply seated. Some will find the cause in Prussian militarism ; others in German philosophy. Some will find a political cause for the war ; some, a moral ; some, an industrial. Some will search for the cause a century back ; others will find it in the events of July 1914. Each person, indeed, will in all likelihood settle the cause according to his own prejudices, or predilections, or special information. But future historians of the war, analytic and dispassionate, will probably single out from the midst of the competing claims one dominant factor which, they will conclude, would have produced the war even if the other elements had been wanting. This factor—without which the war would not have occurred—will be regarded in time to come as *the* cause of the war.

We have already said that it is the search for causes which distinguishes the trained and scientific mind. The ordinary man is content to accept the occurrence of two events in the same unvarying sequence without much question or analysis. It is to him a coincidence and not much more. The coincidences are sufficiently striking, indeed, to

result sometimes in popular expressions which become proverbial. These familiar saws in their turn are accepted by the naïve mind in a pseudo-scientific way as interpretations of the phenomena which they describe. For example:—

Where there's a will, there's a way.'

'A rolling stone gathers no moss.'

'The cracked pitcher goes oftenest to the well.'

'Take care of the pence, and the pounds will take care of themselves.'

'A peck of March dust is worth a ton of gold,'
&c.

Many examples of causal relations of this kind occur in connection with weather lore, e.g. :—

'Swallows fly high, warm weather is nigh.' And the familiar—

Rainbow at night, shepherds' delight ;

Rainbow at morning, shepherds take warning.

The last is a good example of the naïve expression of a causal sequence. The rustic marks and profits by the frequent occurrence of this natural phenomenon : it remains for the meteorologist to explain it as a simple instance of cause and effect.

CHAPTER IV

THE PSYCHO-LOGICAL FACTORS IN MIND GROWTH

IN our last lecture we dealt with the psychological factors in mental development. It remains for us to ask whether there are any other factors in the mental processes which require our attention as important in teaching. Some great thinkers—e.g. Hume and Herbart—speak as if the laws of association were capable of explaining every thought connection. Hume, for example, says of the laws of association: 'Here is a kind of attraction which in the mental world will be found to have as extraordinary effects as in the natural, and to show itself in as many and as various ways.' Bain considers that 'perception of agreement and difference, retentiveness and the two sorts of association—contiguity and similarity—are all that is meant by intellect proper.' Herbart, interpreting association as a causal link between ideas, has employed it in this sense for the construction of a real mechanics of ideas and their relations, their rise and fall. Regarding ideas as *forces* capable of mathematical measurement, Herbart was the first to treat education on a scientific basis. In order, however, to subject the course of ideation to mathematical treatment,

Herbart made use of certain metaphysical postulates, and his educational theory must stand or fall by the metaphysical theory which underlies it. Herbart's metaphysical doctrine cannot be reconciled with the facts which research in the physiology of the nervous system and in pathology has revealed, and, after holding the field for more than half a century, the Herbartian theory of education must now be regarded as requiring great modifications. We now know that our ideas are not dependent solely upon one another. If, sometimes, we do seem capable of keeping our ideas in the same trend or channel, at other times they come and go pretty much at random.¹ The interconnection between our ideas is not always or even ordinarily due to mutual influence, but is often dependent upon our temporary moods, the state of our health, and, above all, upon our *emotional* state. It is mostly due to neglect of the part which emotion plays in influencing our mental growth that the Herbartian doctrine is found wanting; and it is an interesting speculation at the present moment to consider in what degree the Herbartian theory, which with its theory of mechanical ideation has dominated German education for fifty years, is responsible for the attitude and outlook of modern Germany. While fifty years of Herbartianism may account for that country's great intellectual achievements, may not the same influence at the same time account for the strange moral perversion that characterises her attitude towards life and conduct ?

¹ Kulpe, *Outlines of Psychology*, p. 4.

It may have occurred to some of you that the principles we have been considering are applicable to all forms of mental life—to the animal as well as to the human mind. The principles of recency, novelty, frequency, vividness are all employed, for example, in the training of a performing dog or cat. The canine or feline mind, too, learns undoubtedly to associate certain facts by which the animals habitually regulate their actions: it is, in fact, upon a due observance of customary associations that their very existence depends. The dog, for example, can identify its master in a crowd (similarity), and at the sound of a threatening accent or at the appearance of a whip, either fact immediately suggesting punishment (contiguity), will cower with tail between its legs. How far any animal interprets causal sequence as anything beyond mere customary contiguity is a moot question.

We have already said that the human mind has a certain, if limited, power of controlling its associations. Now it is this power of controlling our associations that distinguishes the 'species' man from the 'genus' animal: that constitutes man a 'rational' or a 'thinking' animal.

It will be your main business as teachers to teach your pupils to think. Now, what do we mean by the words 'to think'? From what we have already said it will be clear that 'to think' is not merely to have a succession of associated ideas. If this were true, then we would have to concede that many of the higher animals can think—for example, the dog, the cat, the elephant, the

horse. For undoubtedly these animals have associated ideas, and for that reason they can be trained to perform many actions that are reckoned intelligent. I have read somewhere about a dog which on hearing its master's whistle would immediately leave a room, race down a garden path, *open a gate by raising the latch*, and join its master in the field. Suppose we take the incident as an authentic occurrence. Let us consider its significance. You will agree that the dog seemed to do exactly what we might expect from a rational human being placed in a similar position—what, for instance, the son of the house might have done. From the analogy of our own minds, we might conceive the following to be the associative elements in the dog's mind. The sound of the whistle recalls the image of the master by simple contiguity. The dog knows by a frequent or habitual conjunction of these two ideas that a pleasurable experience is likely to be in store for him, and automatically he reacts or responds to the stimulus of the whistle, and bounds to meet his master just as the scent of a hare would send him in hot pursuit of the quarry. Now, if it be asserted that all the dog's actions are regulated by exactly the same kind of mental procedure, would you call the process 'thinking'? It is canine thinking—dog's logic, if you like—and is on the same plane as a good deal of human thinking: for example, of the Flora Finch type. It is what James calls 'habitual' thinking or associative thinking.

But, you ask, what about the latch-lifting?

Surely that was the action of a super-dog!—the result of a higher order of mentality. We are, of course, considering the case of what is commonly called a 'very clever' dog; but even the latch-lifting incident, like all the actions of the dog, must be regarded simply as an example of 'thinking by associative contiguity,' and may be quite simply explained. One day the dog, seeking to escape from the boredom of life in the garden, by a lucky chance hit the latch with his nose—and so released it from the catch! From that moment the excitation of the associated ideas—latch, nose-action, open gate—would result in freedom for the dog, and frequent repetition would soon establish the habit.

Now, is this action on the part of the dog exactly similar to what a normal boy would do under the same circumstances? Boy and dog would behave in a very similar manner in response to the stimulus of the whistle—they would do the same kind of 'habitual' thinking. But when we consider how the boy and the dog set about opening the gate, we find that they think in vastly different ways. The dog's action, we saw, was automatic; the boy's action is *rational*. The boy may never have seen the gate before, nor the particular sort of latch or bolt that keeps it shut. But former *similar* associations have taught him that a gate is meant to open. He therefore looks for the obstruction that keeps the gate closed. If the obstruction be a latch, he lifts it; if a bolt, he draws it. If there be both a latch and a bolt, and perhaps a stone laid against the gate, former experiences teach the boy to

remove *all* the obstacles that prevent the gate from opening. The dog, on the other hand, confronted with the new obstacles of a second latch or a bolt or an impeding stone, can only bark in impotent fury. The boy can reason the matter out ; the dog cannot go beyond the bounds of his habitual thinking. The boy's associations are *productive* : they prove useful to him in many diverse situations ; they help him to adjust himself amid the difficulties of a new situation. The dog's associations, on the other hand, are unproductive : that is to say, they are useful to the dog in only a strictly limited measure or under identical conditions ; they do not help the dog to solve a new problem that arises through some variation of the ordinary conditions.

I have been at some pains to show the difference between animal thinking and human thinking, because it is human minds which you are called upon to train. We have seen that in human thinking there are two degrees : the first (which it has in common with the animal mind), by which it simply judges or affirms that things *are* or by which it recognises the facts of sense ; the second (which distinguishes it from the animal mind), by which it *draws conclusions* from the facts presented by sense. It is this second aspect of mind which we call reasoning. When we draw a conclusion from facts that are present to sense, or that we know, we are said to *infer* our conclusion. For example, when I refuse to budge from my bed on a cold morning when I had arranged

to go fishing, my action is due to the *inference* I make—viz., that the east wind will prevent the trout from rising that day. One of the main tasks of the educator is to train the pupil to make true inferences, and it is of the utmost importance to realise that the way or method by which the mind learns to make inferences must indicate the method by which we should train the mind itself. I wish therefore to lead up to a discussion about method in teaching by first indicating the nature of inference. You will notice that I am now laying the emphasis upon *logical* rather than upon psychological factors; but it is impossible to separate them entirely. The psychological factors are always present—merged in the logical.

FILLING UP THE CONCEPT

It is important that you should understand first of all how a child comes to *know* and to increase its knowledge of any fact or thing. Let us consider, for example, how a child comes to know what an orange is. Long before the child is allowed to enjoy the delight of sucking an orange, he has probably seen one many times. When it first attracts his attention, he is conscious of it only as a vague, brightly coloured, nameless thing existing outside of himself. What corresponds *in the child's mind* to this first vague impression is the child's first 'idea' of an orange. Possibly this first 'idea' or image may not survive beyond the moment of impression. If, however, without the presence of any actual orange, the idea of the

orange should survive or be revived in memory this idea is called a *concept*. I want you to consider carefully how this concept grows or fills up. Elementary education consists, for the most part, in filling up our pupils' concepts.

First of all, then, the child *sees* the orange as a yellow, round thing existing outside of himself amidst a confusion of other things—some bigger, some smaller. If the child were never allowed to approach the orange, his concept of an orange would remain vague and empty. It might be represented in this way (Fig. 1):—

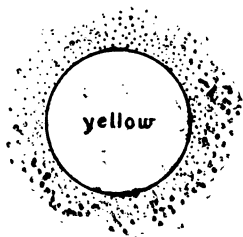


FIG. 1.

Such a concept is relatively blank. Many of our adult concepts are, however, not any richer in content than the child's first concept of an orange. For example, if you have only *seen* a mango or a pomegranate in a fruiterer's window, how much more do you know about either of these fruits than the baby knows about an orange?

As soon as the child is allowed to touch and to handle an orange, his concept becomes immensely richer. The orange resists the touch—it has *mass*. It is lifted—it has *weight*. The hands close round it, it rolls along the floor—it is a *ball* or *sphere*. It is held close to the eyes—the rind is seen to be pricked all over with minute holes like the lid of a pepper-box, and is hollow at the flat ends. Next, the orange is carried to the mouth, and the

senses of *taste* and *smell* add their quota of information to the concept. This procedure may be carried into great detail. After frequent repetition of similar experiences the child will be found to have a fairly complex concept of an orange. Compared with the first vague concept represented in Fig. 1, the child's concept is now relatively full and may be represented thus (Fig. 2):—

Before the child has enriched his concept to the degree represented in Fig. 2, he has, however, completed a second stage in the process of concept-forming, which is the most important of all in his development as a human being. The child has learned to give his concept a *name*. He does this as soon as the concept has become quite definite,



FIG. 2.

i.e., as soon as its chief characteristics or features have been clearly defined by the various senses. When the child has learned to use names for his concepts he has made an immensely significant advance. The names then become *tokens* for the concepts—tokens by means of which he communicates and exchanges thoughts, that is, concepts, freely and profitably with other human beings. Notice, however, that the name as a token has not the standard or fixed value that a pound-note has as a substitute for twenty shillings. The name stands for the concept *in any degree of fullness*. The name orange has not the same *meaning* to the child that it has to the botanist or to the fruit merchant. The qualities

included in the concept are called the *connotation* (or meaning) of the name (see p. 191). In the currency of language, or in ordinary conversation, we usually know fairly well what the connotation of each term includes; but misunderstandings often arise from the fact that two speakers may be using tokens—i.e. words—which have different values for each of the speakers. Tom's concepts, for example, may be much richer than the concepts of Harry; but Tom's concepts and Harry's concepts have the same names.

It is important next to examine *how* the child comes to use a name for a concept. Suppose the child has learned to apply the name orange to the common Seville orange, and one day when he asks for an orange has a lemon put into his hand. Will he accept the lemon without question? It is very probable that the young child who has never seen a lemon before will for a moment or two be deceived. Why? Because he accepts the lemon as an orange on account of its *similar* size and colour. But doubts soon creep in. This orange has an uncommon shape. There is also something suspicious about its colour. The rind feels rather smooth. He smells it—it has not the scent of an orange. He peels it—tastes it—and finds that it has not the characteristic sweetness and flavour of the orange. He declares that it is *not* an orange. He is on the way to forming a useful concept of a lemon, and when some one supplies him with the new name he accepts it at once as a token for the new concept. The name

fixes the concept, and will help to revive it. Notice what happened. The child perceived the *differences* between the old concept and the new, and it is *this power of perceiving differences* that enables the child to enrich his old concepts and to form new concepts, and so to advance in knowledge.

Also, suppose I ask the child to pick out all the oranges contained in a basket of mixed fruits. How will he proceed? He will first of all pick out all the fruits which *resemble* oranges. He will select all the yellow-coloured fruits. Looking now for *differences*, from among the yellow-coloured fruits he will reject all the lemons. Perhaps the small tangerines may cause some doubt, but he will ultimately accept them for reasons of *similarity*—similar colour, similar taste, similar structure. It is by the use of this power of *discrimination*—of *seeing differences amid similarities and similarities amid diversity*—that we build up our working concepts. What we have to train our pupils to do is to *discriminate*—to observe differences and similarities. Some people are fond of urging that education should be a training in observation. If by observation these critics mean *discrimination*, or the search for similarities and differences, we can have no quarrel with them.

Next let me draw your attention to a characteristic feature of the concepts which we actually use. In every concept which we employ in the common exchange of thought there are several essential features which remain constant, while there are many details which we commonly neglect. For

example, suppose I ask each of you to consider what is your concept of 'dog.' If you do not think of some individual dog, your own or your neighbour's, you will agree that only a very vague and blurred image of a dog arises in your mind—a veritable shadow-dog, but a dog, nevertheless, with certain definite features, the common characteristics of all dogs. Your conceptual dog is not a portrait; it is rather a composite photograph of many dogs—that is, a photograph composed of many photographs superimposed upon one another; but at the same time this composite picture or concept will enable you to distinguish as dogs all the dogs of every species reared since the Deluge. Robinson Crusoe's dog is an example of a purely conceptual dog. Defoe does not describe Crusoe's dog in detail. He tells us nothing regarding its breed, size, or colour. It remains a pure concept as against what most descriptive writers would have made a portrait. As a real, live, individual dog, Crusoe's dog is a failure.

While our working concepts thus tend to assume a generalised form, it is discrimination—perception of similarity and difference—that enables us to fix upon the essential and characteristic features by which we recognise any individual object. What distinguishes the expert from the ordinary untrained observer is simply the degree in which the power of discrimination has been developed. The specialist in any department of knowledge is the man who by the exercise of discrimination has developed his concepts with great fullness

or in great detail, and by noting similarities and differences has gradually systematised his knowledge. To what an amazing degree this power of discrimination may be developed hardly needs exemplification. Let one instance suffice. I have heard of a pigeon-fancier who, at shows held at various places throughout the country, out of many hundreds of pigeons, which to the untrained eye were all alike as peas, could unerringly pick out those birds which had been bred from stock supplied by him.

We should provide, then, for our children an education which, during the formative years, is a training in discrimination. We should teach them to look for differences and similarities. It is important to realise that the child in acquiring some new item of knowledge about any object uses the same means as the scientist who establishes the most abstruse law. Both must use discrimination. The difference in development is only one of degree.

But a child's education does not consist in merely forming concepts. If this were all, the task of the educator would be relatively simple. It would consist simply in putting before the child those facts or objects which we consider he ought to know, and in requiring him to employ his senses upon those facts or objects so that he might observe differences and similarities amongst them. Our method of teaching would then be an attempt to follow the method of the

mind itself—a method of discrimination or analysis. This, fundamentally, must remain the method which all teaching follows. But further consideration of the concept will show that such a method is inadequate: analysis requires the complementary process of synthesis.

First of all, then, *concepts are for use*. With our new concepts, more enlarged, more filled in, we face the world and find that we have to make certain readjustments in our relations to our environment. Our concepts are the instruments with which we test fresh experiences, searching and probing for differences and similarities. If our concepts have no consequential value they are rather useless encumbrances. Full concepts should make for greater efficiency in conduct. How do we use them to bring about this result?—*In making judgments*. Concepts cannot remain isolated units of thought. When two concepts occur in succession, they are joined by an act of judgment. A judgment is simply an affirmation that two concepts have some sort of connection. For example, if the idea of 'John Brown' is succeeded by the idea 'man,' the judgment is 'John Brown is a man.' If the succession is John Brown—hero, the judgment may be 'John Brown is a hero' (called an affirmative proposition), or 'John Brown is not a hero' (called a negative proposition). If the judgment is expressed in words or in sentence form, as in the foregoing examples, the judgment is called a *proposition*. The judgment, or act of judging, is entirely an inner or mental affair. The

proposition or sentence stands as the token for the judgment just as the name or *term* stands as a token for the concept. You must carefully distinguish between the mental act and its formal expression in language—oral or visible.

In the second place, just as concepts may be empty or full, poor or rich, so judgments may be of different degrees of content. For example, the propositions 'John Brown is a thinking animal,' 'John Brown is dead,' contain less meaning, are less wide in their application, than the propositions 'All men are thinking animals,' 'All men die.' The first two judgments, expressed in words, are called *singular propositions* because their subjects—in each case, John Brown—refer to single or individual things. The second two judgments are called *universal propositions* because in both we affirm something about the whole race of men.

I said in speaking of the singular proposition 'John Brown is dead' that it had less meaning than the universal proposition 'All men die.' The singular proposition refers only to John Brown, one man, while the universal proposition refers to all men. If John Brown is a friend of yours, or a member of this class, you will probably think that the first statement 'John Brown is dead' is the one which has most meaning—at any rate, has most interest; but if you are not interested in John Brown, if you regard him quite impersonally as a mere unit, you will agree that the universal proposition 'All men die' is the more important, for the truth

expressed by it may be held to include the truth expressed by the singular proposition. Now, just as it is the business of the teacher to put the young pupil in the way of making richer concepts by requiring him to perceive differences and similarities, so it is one of his most important functions to get the pupil of more mature years to form universal propositions.

One question remains: How do we come to form universal propositions? How do we arrive at the conclusion 'All men die'? Simply by noting manifold occurrences of the same fact under similar or identical conditions :—

A died in the past.

B died in the past.

C died in the past.

.
.

All men have died in the past.

We expect the same uniformity of action in the future as in the past. We accordingly *conclude* or *infer* 'all men die.'

This sort of inference, reached by a simple enumeration of individual instances of similar occurrences, is called inductive inference, and the method of reasoning is called the inductive method. Notice, again, the important part which the perception of identity or similarity plays in the establishment of an induction.

Note.—It is important to draw attention to a distinction in the use of the terms 'induce' and

'deduce.' We *deduce* our *inductions*: that is to say, all reasoning is really deductive in character. But that special aspect of the reasoning process wherein we reach generalisations or inductions by a consideration of numerous instances is specifically called inductive reasoning. We reserve the name deductive reasoning for the reverse process—that is, when we *test* the truth of an induction by applying it to the solution of special cases.

Let us at this stage summarise the conclusions we have reached :—

1. We form our concepts by the discriminative power of our senses: that is, by analysing the object into its elements—its properties and qualities. By re-combining or synthesising the elements to re-form the object, we view the object as a new whole, as a fuller and richer concept. The elements are re-combined or synthesised in the object by association through contiguity.

2. We form universal propositions by *comparing* objects—by perceiving the *similarities* between objects and the uniform behaviour of the objects.

These two conclusions furnish us with the only method of teaching which we can derive from a study of the mind itself. If we are content to build up concepts only, we must proceed—

First, to analyse the object into its elements ;

Second, to synthesise the elements to re-form the object.

The two stages are correlative and supple-

mentary, and may be regarded as two aspects of our process or method—the *method of analysis and synthesis*.

But concepts never stand alone—they are united by judgment and expressed in propositions. We form first singular propositions and then, if we are wise enough or able enough, we proceed to elevate the singular propositions into universal propositions. We *infer* our conclusions because we find nothing to contradict them in the uniform behaviour of many particular instances. In other words, we reach a conclusion by simply heaping up sufficient instances of the particular fact we are considering. This is the inductive method.

Finally, universal or general propositions, or inductions, are, like concepts, meant to be used. When we have once formed general propositions, we use them as *sign-posts for our future conduct*. We are no longer the slaves of our particular judgments. This is the purpose of general propositions in the economy of our intellectual life: they afford short-cuts to correct thinking and correct conduct. If a conclusion has been correctly formed on true grounds, we accept it as true, and are prepared to abide by its *consequences*, now, at all times, under all circumstances. Unlike the anarchist's principle which we discussed in our first lecture, the general proposition can claim universal validity.

Let us see how it works out in consequences. Suppose I am angling on a stretch of water where I know I have no right to be. I *infer* this, because

a few minutes ago I passed a notice-board with the legend 'No fishing allowed. Trespassers will be prosecuted' painted in letters of such vividness that even the most myopic might read. My views, however, regarding riparian rights are, perhaps, latitudinarian, and I have made up my mind to run the risk of penalty and disgrace—if caught. Naturally, I proceed about my unlawful business very warily—one eye for my flies, one for my surroundings. Suddenly, I see at a bend of the stream, some distance above me, an object—which might be a man, and, if a man, my enemy the game-keeper. I pause and consider the situation. Is it a man? I apply *tests*. All men move. Does this object upstream move? Not so far as I can see. Therefore, by this test, the suspicious object is not a man. But 'all men can stand without moving.' This object stands without moving. Therefore, by this test, it may be a man. But 'all men are restless' (they cannot remain motionless for any length of time). This object never stirs. Therefore, by this *test*, it is not a man, and I can resume my angling. I might have applied other tests—such as shape, clothes, &c.—but by applying the one test of movement, I have satisfied myself that the object cannot be a man, much less a keeper. Ten minutes later, however, I see a sight which makes my pulse beat a little faster. A figure is moving among the trees two hundred yards above me. This time there can be no doubt regarding the object, for it satisfies all my tests of a man—movement, size, shape, clothes. But

is it the gamekeeper? I am not going to leave a spot where I am having good sport for any casual passer-by—a tramp, perhaps, or a field labourer. Is this the gamekeeper? Rapidly I apply my tests.

- (a) All gamekeepers wear knickerbockers.

This man wears knickerbockers.

This man is the gamekeeper.

- (b) All gamekeepers are active in their movements.

This man is active in his movements.

This man is the gamekeeper.

- (c) All gamekeepers carry a gun.

This man carries a gun.

This man is the gamekeeper.

- (d) All gamekeepers are accompanied by a dog.

This man is accompanied by a dog.

This man is the gamekeeper.

These four tests are sufficient for me, and I hastily beat a retreat to the safe side of the boundary-line where keepers cease from troubling and a wearied angler takes his rest.

Assuming that I have used true universal propositions (in the above instances, of course, I have not), notice how I have used them to affect my conduct. I applied them to a particular situation and formed a conclusion regarding that situation. A conclusion of this kind made from a universal proposition is called a deductive inference, and this method of arriving at particular truths is called the *deductive method*.

You will note that the truth of every deductive inference or deduction depends upon the validity of the general proposition on which it is based. In my adventure while trespassing, for instance, I may after all have made a mistake, for the general propositions which I used are not by any means true—e.g., all gamekeepers do *not* carry a gun, &c. On the other hand, had I been able to consider as valid a proposition of this form 'All men, wearing knickerbockers, are gamekeepers' it will be plain that by means of the test 'This man wears knickerbockers,' I could at one step have reached the true conclusion—namely, 'This man is a gamekeeper,' and accordingly could have dispensed with all other tests whatever.

An example like this will serve to show you how serviceable for conduct general propositions can be. It will be your business as teachers to train your pupils to make them. When once formed on valid grounds, they are like 'seven-leagued boots,'¹ which in the economy of thought enable us to annihilate time and at a single bound to arrive at conclusions which to the intellect that has not reached this stage of development are only possible by a tedious consideration of individual instances.

A further stage of development is seen in the case of the scientist who still farther abbreviates the expression of a judgment by the use of a *formula*. Without employing any technical example, I might illustrate what I mean by asking you to consider

¹ James, *Pragmatism*.

the following symbolic expression of the relation between reading and thinking—

$$R = T,$$

when R stands for reading and T for thinking. It is part of my business to discuss with young teachers the methods of teaching reading. It takes a month or two to cover the ground, but at the end of the course I summarise all the conclusions reached in the formula, $R = T$. To you these symbols will have scarcely any meaning at all until you have considered the implications. For me, they sum up all that many years' experience has taught regarding the aim of reading and the best methods of attaining that aim. They form an important part of my professional equipment, for they put all that I know concerning the technique of reading in less than 'a nutshell.'

This rough sketch of the logical process must suffice us here. For a more rigorously accurate account of the logical factors, you should consult some systematic treatise. But it is necessary that you should recognise the importance of a logical training. Most of the actions of our mature life are governed by the inductions and deductions which we have already formed out of our experience during the passage of years. But owing to hurried, incomplete, inaccurate observation, we are prone to form loose and hazy generalisations and to make false deductions resulting in wrong conduct. No education can be considered 'efficient' which does not give the pupil the power to distinguish the processes of truth from the processes of error. It does not

follow that we should teach our pupils logic, though I think you will agree, if you have followed the argument developed in this lecture, that it is necessary that the teacher at least should have a grasp of the logical principles. If he is ignorant of these principles how can we expect him to be able to train his pupils to arrive at sound conclusions? We have already spoken of the psychological mode of thought as a necessary attitude of the teacher. It is equally important that teachers should cultivate *the logical habit of mind*.

CHAPTER V

METHODS OF TEACHING

IN the two preceding lectures we have discussed the psychological and the logical factors in mind-growth. Our discussion has shed some light on the way in which the objects of the external world become part of the furniture of the mind, and also on the way in which the mind makes use of this material in guiding and controlling actions or conduct. The conclusions we reached should help us to define what we mean by methods of teaching.

Thus far you will notice we have spoken only of a mind and of a world outside of the mind : of a mind that perceives, feels, reasons, and wills and of a world that is the object of the mind's perceptions, feelings, reasonings, and volitions. We have not yet spoken of the part which the teacher is called upon to play in this process of mind-building. When the teacher is introduced, you will observe he comes in as a third party, as a mediator between the world and the pupil. If you could imagine a human being reared in isolation from all other human beings—a Robinson Crusoe from the day of his birth—you would have an example of a human being developing in stark, solitary contact

with Nature. It is said that an experiment of this kind was once tried by one of the Stuart kings of Scotland. With a view to finding out what was the original, underived language of mankind, the king is reported to have placed a healthy babe in charge of a deaf-and-dumb nurse on one of the islands of the Firth of Forth. It was predicted that the child would speak Hebrew ! Unfortunately we do not know the result of this interesting experiment in education. Apart from legend, however, there are a few authentic cases in which human beings have managed to survive to maturity in almost complete isolation from human fellowship, under the rough nursing and unaided tutorship of Nature. Perhaps the best known and most interesting case is that of the savage of Aveyron. While still an infant this ' wild boy ' seems to have been abandoned by his parents in the forest of Aveyron. Living like a wild thing of the woods, he somehow managed to survive till near the end of boyhood, when he was caught and placed in the care of a distinguished Parisian doctor, M. Itard, who has given us a most interesting account of the attempt he made to educate this savage. It must suffice here to say that his teacher found it very difficult to get the boy to speak at all or to imitate the sounds of human speech, and almost impossible to get him to understand spoken language. As a result of his observations and experiments, M. Itard concluded ' that man is inferior to a great number of animals when left in a pure state of Nature.' ¹

¹ Dumville—*Teaching : its Nature and Varieties*, p. 192.

Yet it was an 'education by Nature' that was so highly lauded by Rousseau in his famous book 'Emile.' It remains Rousseau's supreme merit as an educationist that he was the first to emphasise the importance of 'natural' factors in education. But it must be kept in mind that civilisation does not mean life in harmony with the crude law of Nature—

Nature red in tooth and claw.

Rather, it means life in constant contest with Nature—a contest in which man's primitive instincts and passions must not be given their 'natural' sway, but must be curbed and guided in accordance with those super-natural or moral laws which man has evolved for the control and direction of his 'social' relations. An efficient education from this point of view means a victorious struggle *against* Nature.

It is the teacher's business to help in this struggle. Man, unaided and solitary, could make no advance, would indeed quickly disappear from this planet. From the moment of his birth, the child is assisted in the fight. He is interfered with in all sorts of ways, and all his adjustments to the external world are more or less directed by third persons. The teacher's main function is to interpret the world to the child—that is, to communicate to him a certain minimum of knowledge and to instruct him in the means by which he may add to his acquired stores. It is the function of method to aid in this process of interpretation. Accordingly, it is to the teacher

as an interpreter that our attention must now be mainly directed. *The means which he uses to interpret to the child the world of sense, of thought, and of action are called his methods of teaching.*

There need be no mystery about the meaning of the term method. In education it means what it means in any connection whatever—simply *orderly* procedure. *Order is its essence.* Synonyms for the term are mode, way, manner. It describes the *how* of teaching just as it describes the *how* of conducting a business or of navigating a ship or of playing a game.

It will be desirable, however, to give, if we can, a greater degree of precision to some of the senses in which the term is employed in educational discussions. When we say that a person is methodical, we mean that he is known to be orderly in arranging the details of his business. We contrast him with the man whose affairs are usually in a state of confusion. Some men are methodical in everything they do, in arranging their clothes neatly at bed-time, in disposing of their watch-keys. These are the people who have never to search for a collar-stud or a railway-ticket, and can always lay their hand on matches when they want them. Such paragons have a definite order of procedure which they invariably follow—they have developed a *habit of order*.

In this homely sense of definite arrangement of details, method is just as valuable in teaching as in any other sphere of action. 'A place for everything and everything in its place' is as excellent

a motto for the schoolroom as for the home or the shop. At any rate, teachers who neglect it may well be held suspect of negligence in matters of greater import, where their delinquency can be less easily checked. Not only does a definite programme of work enable the teacher to cover ground more rapidly as well as more effectively, but it must be kept in mind that pupils are close observers of a teacher's habits and are ever ready to imitate them. A teacher whose classroom is generally untidy, whose blackboard work is careless, whose personal habits are slovenly, can scarcely be trusted to form habits of neatness or accuracy or good taste in his pupils. There is apt to be a transfer of 'sloppiness.'

A mere sense of neatness, of orderliness, is, however, not all that is meant by method. Many teachers, it is true, who have a gift of neatness or a mania for order, are often credited with being more methodical than they really are, for it is possible to be methodical in a merely mechanical way. What usually passes for good method—for example, the neat and orderly setting out of a sum—should be the concrete expression of a method already determined in the teacher's mind. If the teacher has not carefully thought out the particular steps by which the lesson should be developed, his so-called method may be more apparent than real. It is more likely to be the mere rule-of-thumb imitation of another's method than the result of his own well-considered judgment. Here, then, we have another sense in which we employ the term

method—namely, the sense in which method means *the intelligent construction and development of a lesson*. It is thus we use the term when we say that a teacher prefers the decomposition method of teaching subtraction, the phonic method of teaching reading, the concentric method of teaching geography. Each subject of the curriculum will, in this sense, have its own method (or methods), which will be *the detailed description of the procedure to be followed in teaching the subject*.

In regard to special methods, a few observations must be made. 1. No two teachers will teach the same lesson in exactly the same way: indeed, no teacher can ever repeat a lesson on identical lines. For the only true guide to method, when you are face to face with a class, is the pupil himself. That is to say, the teacher can never follow hard-and-fast lines in teaching any subject; he must be ready to adapt himself to circumstances and to accommodate himself to the pupil's point of view. While acting as the pupil's *guide*, he must keep pace with him. 'The teacher is like a guide and the pupil like a traveller in an unknown country. The traveller knows where he wants to go, but knows neither the way nor the character of the place he wishes to reach. The guide knows both, and plans the journey so as to set out from where the traveller now is, and to reach where he desires to be, and that by the best way. Such plotting out of the journey is analogous to the teacher's laying down his course of instruction in any subject with all its order of topics and arrangement of matter. But

unless the traveller—that is, the pupil—takes the journey himself, nothing is accomplished. Many a lesson is too much like a guide describing the journey to the would-be traveller, who sits and listens, but does not leave his chair to undertake it.’¹

2. While the teacher must be prepared to modify the details of any lesson, he will at the same time consistently adhere to the one general line of attack. Having determined, for instance, to teach subtraction by the method of equal additions, he will not capriciously change his plan of instruction and adopt the method of decomposition. There are many roads to Rome, and the teacher has often a choice of methods. In choosing his method he will be guided by several considerations:—

- (a) The attainments of the pupils.
- (b) The previous training of the pupils: the method adopted should be uniform with the methods generally approved in the school.
- (c) His own knowledge of theory: he will teach the method best which he understands best.

3. In preparing a lesson or course of lessons the teacher has often to argue backwards. He must ask himself, ‘What is the final stage?’ because that must govern the intermediate steps.

4. The paramount consideration in adopting any method must be ‘Is it a method consistent with the laws of mind-growth and of logic?’ If

¹ Raymont, *Principles of Teaching*.

it violates any of those laws, it must be discarded. Provided it is in harmony with those laws it may be safely adopted.

Finally. There is much futile controversy amongst teachers regarding the value of methods. The discussions are too often due to the exaggerated importance which men attach to their differences of opinion, and remind us of the controversy between the Big Endians and the Little Endians of Lilliput. You remember in Swift's satire how civil war, caused by a dispute as to the proper method of cutting an egg, distracted the kingdom of Lilliput? Six rebellions were raised on that account. One emperor lost his life; another his crown. Many hundred large volumes were published upon the controversy, and eleven thousand persons suffered death rather than submit to break their eggs at the smaller end!

Strange such difference should be
'Twixt tweedledum and tweedledee!

Teachers would escape much heart-burning and save much time if in their discussions of special methods they applied the pragmatic test to all such disputes: 'What *difference* does it make whether I adopt this or that method? If both methods are equally valid from a theoretic point of view, which will *work* best or which will be the more *useful*?' They might then conclude with Swift 'that all true believers break their eggs at the *convenient* end,' the determination of the convenient end being left to every man's conscience.

METHOD AS GUIDING PRINCIPLE

It remains to direct your attention to another sense in which it may be said that there is only one method of teaching. In education we distinguish between *general* methods of teaching and the *special* methods of subjects. I wish, however, to emphasise at this point that there is only one essential method of teaching—one common uniform mould in which all other so-called methods must run. All other methods are only varieties in which emphasis is laid in different ways upon one or more phases of the one general method of *inductive-deductive* teaching.

Orderly procedure we have seen is the common element of all methods. Now, orderly procedure, like directed movement of any kind, implies a starting-point, a destination, and a path between the starting-point and the goal.¹ In order to settle the starting-point and the road to be followed the teacher must often reason backwards. Having first asked himself 'What is to be my goal?' and having found the answer, he next asks 'Where shall I start?' and lastly 'How shall I proceed?' When he has answered the *how*—when he has settled the means and arranged their order—he has determined the method to be followed. Now it will be plain that he can only satisfactorily answer the *how* if he has an adequate knowledge of (1) the subject he proposes to teach; (2) what the child already knows about the subject; and (3) the manner in which the

¹ Raymont, *Principles of Teaching*.

mind adds to its knowledge. It must be assumed that you as experts have a more than adequate knowledge of the subjects you propose to teach in the continuation classes. In the preceding lectures an attempt has been made to sketch for you the mode in which the mind grows and adds to its stores of knowledge. It should therefore be evident to you all that the one way to teach is to follow the way in which the mind learns. That is to say, the psychological order of analysis and synthesis determines what is the only valid general method of teaching. It is a matter for regret that educationists have not yet coined a suitable name for this method. Inductive-deductive is clumsy. Analytic-synthetic has the same defect. Perhaps 'psychological method' would do as well as any as a label for the concept.

While it is important to realise that there is only the one way in which the mind learns, the two distinctive and complementary phases of the learning process—induction and deduction—may nevertheless, as far as the teaching art is concerned, be considered separately. In their separate aspects they give their names to two distinctive and important methods of teaching, viz. the inductive method and the deductive method. By making this distinction it is only intended to convey that in many lessons the emphasis is laid almost entirely, though never exclusively, upon one or other of the two phases of the mind process. In our discussion about the logical basis of teaching we learned that induction means that

form of the reasoning process by which we ascend from the observation of individual facts, by filling up concepts and making judgments, to the establishment of general laws. The validity of the general laws depends upon the truth—or the fullness—of the concepts, which are the bricks with which our mental edifice is built. *Inductive teaching* means that form of instruction by which the pupil learns or is led to discover truth for himself. He does this by (1) employing his senses upon the material put before him (observation); (2) noting differences and similarities (discrimination or analysis); and (3) classifying and naming (synthesis). *Deductive teaching* means that form of instruction by which the pupil tests the truth of a generalisation (inductively reached either by himself or by earlier discoverers) by applying it to new instances.

Provided our pupils have been trained to form true inductions, they may with some safety be left to make the deductive tests for themselves. It would therefore appear that inductive teaching is the highest form of teaching, and the one which may most usefully be employed by the teacher in *educating* his pupils. For, let me repeat, in the simplest induction which a child makes, his mind works by the same processes which the most highly trained scientific mind employs in establishing the most abstract laws.

Teachers differ greatly in the degree of skill which they exhibit in employing the inductive

method. Where one teacher may fail entirely to get his pupils to form an induction, and in the long run is obliged helplessly to tell or enunciate the law, a more skilful teacher, by arranging his facts in a more orderly and better connected sequence, succeeds easily in *educing* the desired conclusion. This facility seems to depend largely upon native endowment and aptitude, but it is also a matter of skill acquired by intelligent practice.

It remains to illustrate what is meant by inductive and deductive methods of teaching. The modern method of teaching geography will provide us with an example. An enlightened teacher of geography is no longer content to make his lesson an exercise in memorising mere catalogues of names of capes, bays, towns, &c. Rather, the geography lesson has become (for the pupil) a valuable exercise in observation and inference—inductive and deductive. The pupil is trained to read a map so that without the aid of teacher or text-book he can infer from the data supplied by the map a great deal of information about places and countries and the circumstances amid which people conduct their lives in these places and countries. He learns, for instance, that the situation and importance of a town are rarely accidental, but are usually the result of geographical conditions. There is, of course, a very definite limit to the amount of information which he can derive in this way, and any inferences he makes must always be checked by reference to the actual *facts*. He could not, for instance, estimate the size of the

present population of Glasgow by any amount of observation of the map. But if the teacher were to ask him to explain the increase in the population of Glasgow from, say, eighty thousand in the year 1816 to, say, a million in 1916, he could make a shrewd estimate of the relative importance of many of the factors which have contributed to this result—e.g.; its situation on a navigable river, its situation facing the New World, its means of internal communication, its position with respect to coal- and iron-fields, &c. Why the rapid increase of population took place during the nineteenth century is a question which cannot be answered from the map; but the teacher need not *directly* remind the pupil about the invention of the steam-engine and the industrial revolution. If he knows his business, he will prefer, by skilful questioning, to suggest these factors, and to impart just sufficient information to enable the pupil to infer a fuller explanation. By comparing the rise and development of Glasgow with that of other towns—e.g., Liverpool, Bristol, Hamburg—the pupil is enabled to form a generalisation about all towns similarly situated. The teacher at the close of such a lesson might ask the pupil to examine from this new point of view the question propounded by Macaulay: ‘Who can say that a hundred years hence there may not be on the shore of some desolate and silent bay of the Hebrides another Liverpool with its docks and warehouses and endless forests of masts? Who can say that the

huge chimneys of another Manchester may not rise in the wilds of Connemara ? ' ¹

There is no need to multiply examples, and it seems hardly necessary to warn you that there are many cases where the inductive method cannot be applied at all. For example, in most history lessons the inductive method is altogether out of place. If the pupils have no previous knowledge, it is quite impossible to educe the events of a reign or the date of a battle. Such facts must be directly *told* to the pupils. On the other hand, the deductive method may often be profitably employed in teaching history. From the character of a monarch or a minister, or from the prevailing social conditions, certain results are seen to be inevitable: they have in fact been often predicted—that is to say, *inferred*. But in most lessons opportunities for inductive teaching will arise. The desire to ' educe ' may, however, become a mania. The teacher must be on his guard not to be drawn off from the main purpose of the lesson. If he be a person of discretion, he will constantly ask himself ' How much can I deduce ? How much must I tell ? '

Each of these methods—the inductive and the deductive—then, has its own place in teaching. Each has its special work to do. The inductive aims at extending and systematising the pupil's knowledge; the deductive aims at helping the pupil to put his systematised knowledge to a correct use.

¹ Speech on the Reform Bill.

We have already expressed the opinion that the inductive method must remain the principal *educational* method. But by neither method can the teacher succeed in his task if he fails to pay heed to the part which the pupil must take in the work. Unless he arouses the interest of his pupils, stimulates in them the spirit of inquiry, and secures their co-operation, the teacher labours in vain. Now, to secure these necessary conditions, he must avoid asking the pupil to receive anything on 'authority'—his own or any other person's. The pupils must not be asked to accept any statement *sub umbra magni nominis*, i.e., 'under the shadow of a great name.' The teacher must look at the matter from the pupil's own point of view. That is to say, he will best secure interest, stimulate inquiry, and promote self-activity, if he teaches inductively.

But the principle of economy comes in. Life is too short for us to learn inductively even the things which it is important that we should learn. We must be content to take a vast deal on authority. As long as we have grounds for assurance that authority can, if required, produce its proofs, we accept most of its dogmas willingly enough. Moreover, as far as education in the continuation school is concerned, we must assume in dealing with the adolescent that the student is already interested in the subjects of his course, since he largely chooses them himself, and we must consequently find for him *short cuts* to learning. We must often adopt the deductive method. We must

often be content simply to state the rule and proceed to show how it is applied. Which of the methods we are to adopt will depend upon our aim and the results we wish to obtain. The thoughtful teacher will usually effect a judicious compromise, employing sometimes the one method, sometimes the other. As long as he chooses his method consciously and deliberately, with a definite aim kept clearly in view, he can hardly fail to teach intelligently.

CHAPTER VI

FOUR METHODS OF TEACHING

THE methods of teaching discussed in the last lecture followed the order in which the growing and developing mind acquires its stores of knowledge. Little stress was laid upon the way or upon the measure in which the teacher may interfere in the process of acquisition. It is clear that the teacher as interpreter and mediator must play an important part in the process. He may be content to play the part merely of a gentle guide, a benevolent superintendent : he may, on the other hand, be the very tyrant of the child's intellectual life. Between these extremes there are many degrees of interference, and, dependent upon the amount of activity shown by the teacher, there are some methods of teaching which we must consider. In these methods the emphasis is laid upon the part which the teacher plays in the educational process ; but while the teacher's attitude may be said to determine the method, you will observe that all the methods are simply modifications of one fundamental method we have already considered. In reviewing them it is important to note the respective shares taken by teacher and pupil.

I. THE HEURISTIC METHOD, OR THE METHOD OF DISCOVERY

The method which calls for a minimum of interference on the part of the teacher is the *method of discovery* or the *heuristic* method (from root of Greek verb, *heuriskein*, 'to find out'). We have heard of late years a great deal about this method, and somewhat extravagant claims have been advanced on its behalf by zealous supporters. It is, however, not at all a new method, being practically the method of Nature advocated by Rousseau for the training of Emile. Heurism recommends us to bring our pupils into contact with realities and then to leave them to find out truths and principles for themselves. The aim of the method is self-education : the pupil is supposed to organise his own physical, mental, and moral activities. It is really a protest against too much dogmatic instruction, and its principle is sound in so far as it emphasises the importance of stimulating the pupil's interest and self-activity. But its advocates often speak as if the pupil must be told nothing and must find out everything. He is to be placed in the position of an original discoverer. The teacher's duty is done when he has provided material for investigation. After that, he stands aside and the pupil does the rest. Now the plain facts of life, the struggle for existence in modern days, would seem to put the heuristic theory out of court as a valid means of training any child. We cannot afford to waste time in

building up our systems of knowledge over again from the beginning. Nor must we forget that our children *are*—

The heirs of all the ages, in the foremost files of time.

If we could devote a few centuries to the education of a man, possibly we might train him on heuristic lines. At the same time, the heuristic principle has been by far the most stimulating influence in modern education. As advocated by Prof. Armstrong and others, it has practically revolutionised scientific teaching. It is essentially a method of research; but though it finds its proper place and fullest scope in the scientific laboratory, yet in nearly all departments of education the heuristic principle has been potent in breathing fresh life into the dry bones of teaching. (See also p. 139.)

2. THE PRACTICAL METHOD

In employing the method of discovery the teacher is supposed to remain in the background, allowing the pupil to make the proper inductions and deductions as far as possible by the exercise of his own powers. It is a method of *laissez-faire*, and the main emphasis is laid upon the inductive aspect of the learning process. A somewhat similar method is the practical method. When this method is used, the teacher, however, takes a much more active share in the work and lays special stress upon the deductive or practical side. Here the pupil is understood to 'learn by doing': the inductions or laws are made clear by working them-

selves out correctly in the particulars. It is a method formerly used to a great extent in teaching grammar, where the common practice was first to state the rule and afterwards to work it out in examples. In modern linguistic teaching we incline to reverse the order of procedure—that is to say, we teach languages inductively by constructing the rule from the examples. But in many subjects, and specially in the practical subjects of the continuation school where the pupils are of a more mature age, the deductive method has many advantages; for the method involves a principle of the greatest value and one which should never be lost sight of. You remember we said that knowledge which cannot be turned to account, which is not useful to us in our actions or conduct, may be regarded as useless lumber. It follows that knowledge which you wish to become fixed and permanent should have an opportunity of functioning, and should therefore be immediately applied in practice. Perhaps it can be said¹ of some persons that in summer they learn to skate, and in winter to swim. But it is generally true that when theory is separated from practice by any considerable interval of time the theory is apt to become vague and hazy and to have little influence upon the practice. Squeers, the tyrannical schoolmaster of Dotheboys Hall, thoroughly understood the virtue of the practical method, and, as an illustration of the method, you may be interested to hear how it was worked in that famous seminary of learning :—

¹ William James, *Principles of Psychology*, vol. ii.

From 'Nicholas Nickleby'

'Obedient to this summons there ranged themselves in front of the schoolmaster's desk half a dozen scarecrows, out of knees and elbows, one of whom placed a torn and filthy book beneath his learned eye.

' "This is the first class in English spelling and philosophy, Nickleby," said Squeers, beckoning Nicholas to stand beside him. "We'll get up a Latin one, and hand that over to you.—Now, then, where's the first boy?"

' "Please, sir, he's cleaning the back parlour window," said the temporary head of the philosophical class.

' "So he is, to be sure," rejoined Squeers. "We go upon the practical mode of teaching, Nickleby—the regular education system. C-l-e-a-n, clean, verb active, to make bright, to scour. W-i-n, win, d-e-r der, winder, a casement. When the boy knows this out of a book, he goes and does it. It's just the same principle as the use of the globes.—Where's the second boy?"

' "Please, sir, he's weeding the garden," replied a small voice.

' "To be sure," said Squeers, by no means disconcerted. "So he is. B-o-t, bot, t-i-n, tin, bottin, n-e-y, ney, bottinney, noun substantive, a knowledge of plants. When he has learned that bottiney means a knowledge of plants, he goes and knows 'em. That's our system, Nickleby; what do you think of it?"

"It's a very useful one, at any rate," answered Nicholas.

"I believe you," rejoined Squeers, not remarking the emphasis of his usher.—"Third boy, what's a horse?"

"A beast, sir," replied the boy.

"So it is," said Squeers.—"Ain't it, Nickleby?"

"I believe there is no doubt of that, sir," answered Nicholas.

"Of course there isn't," said Squeers. "A horse is a quadruped, and quadruped's Latin for beast, as everybody that's gone through the grammar knows, or else where's the use of having grammars at all?"

"Where, indeed!" said Nicholas, abstractedly.

"As you're perfect in that," resumed Squeers, turning to the boy, "go and look after my horse and rub him down well, or I'll rub you down. . . ."

In the above passage we have an example of the practical method, of knowledge expressing itself in action; and though Squeers was an unscrupulous rascal, his practice as an educator was founded, unconsciously, on sound enough theory. He thoroughly appreciated the value of 'turning to use.'

Turn to Use

In connection with the educational maxim 'turn to use,' it seems necessary to amplify somewhat and, at the same time, to utter a warning. The psychological principle on which the maxim

depends is that every impression made upon the senses has a correlative reaction in the nervous centres. For every impulse inwards there is an impulse outwards. The common pedagogic maxim, 'no impression without expression,' emphasises this central truth. The aphorism, indeed, lies at the core of all sound teaching. But conscientious teachers, trying to teach as they imagine in a *scientific* manner, attempting, that is, to apply their psychological knowledge on every possible occasion, sometimes seem to stretch this truth to unwarrantable limits and for their pains secure results that are simply freakish. 'No impression without expression' has become in fact one of the cant phrases of the educational charlatan and is often employed to justify the most fantastical absurdities in education. The truth is that although Nature spreads before the senses the most bountiful and lavish feast, she does not intend that every guest at the banquet should digest every item of the menu. In the psychological world, as in the physical, Nature is ever prodigal. She does not expect that every impression should have a corresponding expression. If this were the case, mental development would seem to be impossible; our minds would remain in the 'big, buzzing, blooming confusion'¹ stage of early infancy. But Nature does ensure by a lavish expenditure of her resources or by the persistent pressure of experiences, repeated, it may be, a thousand times, that an impression which is necessary for the development of the

¹ William James, *Principles of Psychology*.

individual shall in the long run have an adequate expression. It seems stretching the principle too far for the teacher to insist on every impression having a corresponding expression. He should surely first of all consider what *value* he puts upon any impression before he insists upon its finding expression. It remains, however, quite true that if the teacher has made up his mind that a certain impression, because it has value, is necessary, he can only make certain that the desired impression has been duly registered by insisting upon evidence of a corresponding expression. He does this by asking the pupils to turn to use or to apply the knowledge which he has been endeavouring to implant in their minds. If he has been teaching a theory, he sets the pupils to work out examples. If he has been teaching the meaning of a new word, he asks the pupils to construct sentences involving the *use* of the word. If he has been inculcating some moral precept he will illustrate by historical instances, since it is not always safe or judicious to use examples provided in the classroom or in the immediate environment. If, like Squeers, he professes to teach botany, he will take care that his lesson finds its practical expression in the garden, in the wood, or by the way-side. The students of this class who are, mostly, 'practical' experts will readily appreciate the importance of the maxim 'No impression without expression,' because you realise that the fruits of your teaching will be judged by the tangible results which you will be asked to furnish at the end of the

session's work. Indeed, the great merit, educationally considered, of the so-called practical subjects, e.g., woodworking, dressmaking, millinery, and all handicraft exercises, lies in the fact that just those impressions which the teacher has striven to make upon a pupil's mind, find an immediate and practical expression. In this fact lies the justification and value of these exercises.

3. THE LECTURE OR EXPOSITORY METHOD

Teaching as Telling

It is necessary to say something regarding the method of teaching employed in instructing this class. In discussing methods of teaching with a class of prospective teachers, does it not seem somewhat inconsistent that the instructor should employ the method which must be regarded as the most imperfect of all teaching methods? You may ask what justification can be offered for such a procedure. The lecture method has its own place in teaching because it has its own function. To determine place and function let us examine its characteristics. Think of a lecturer and a class. What is the lecturer trying to do, and what are the means he employs to attain his end? Mainly, he is attempting to *tell* his students something, and the chief means he relies upon to convey the information is his voice—or words. Two conditions must be satisfied in successful lecturing: (1) the lecturer must be distinctly heard; (2) the pupils must be able to follow or to understand

what the lecturer is telling them. Let us assume that the lecturer's voice, articulation, and general style of delivery are satisfactory, and let us concentrate upon the second condition of effective lecturing. Now, pupils can only follow an argument (1) if they are already fairly familiar with the ideas which are being discussed and the words by which these ideas are expressed; (2) if the lecturer's rate of speaking allows them time to assimilate the ideas; (3) if their interest in the subject is strong enough to keep their attention from wandering; and (4) if the theme or argument is developed in a systematic or logical way. Even, however, when these conditions are fulfilled the lecture can only be considered a successful teaching method (5) if the pupils have assimilated the argument in a way sufficiently lively or vivid as to enable them to recall the steps by which the argument was developed by the lecturer.

With regard to (1) ideas and words, it is plain that if the lecturer is to convey *new* information to the pupils, he must introduce new ideas and new words, and must at the same time allow time for the proper association to be formed between the new thing and its label—between the idea and the word. This condition is hardly ever completely satisfied in the lecture method. The teacher, as a mere lecturer, has no means of ascertaining what are his pupils' ideas about the subject or whether the words he is using to describe these ideas correspond with the words the pupils use for the same ideas. He simply assumes that his vocabulary

is the pupils' vocabulary; his ideas, the pupils' ideas.

With regard to (2) rate of speech, have you ever considered what a miracle you perform when you succeed in following the tenor of even an ordinary conversation? The rapidity with which we adults associate words and ideas is so great that we are practically ignorant of any distinction between them. Yet such associations are at first quite slowly formed. For instance, suppose I recall the word 'heuristic,' used a little earlier in this lecture. Did you all succeed in associating the name with the idea it stands for—as soon as the word was revived just now? If this be true of single words, consider how infinitely complex the situation becomes when in a lecture you submit yourselves to a stream of words and sentences, lasting, it may be, without intermission, for an hour! So accustomed have we become to the spontaneity of this process of association that we never realise its complexity. Yet by any reflecting person the achievement of the human intellect in following discursive speech must, in a world of wonders, be regarded as one of the greatest. It will be plain, then, that a lecturer should never speak rapidly: he should rather study to speak at a moderate rate, with due deliberation. If his intention is to teach or to convey information to his hearers, he should allow time for the average person to make the mental adjustments necessary for the proper understanding of the argument.

Again, difficult as it often is to understand

the ordinary speech of the people round about us, consider how much more difficult the task becomes when we are called upon to follow an argument which involves abstract terms vaguely defined and which may be sustained for a considerable time. The impressions made upon the mind of the listener are often of the most fleeting kind, and, before the lecture has ended, the beginning and the sequence of the argument are forgotten. Consider how little of yesterday's sermon the ordinary person can recall!—how much of a sermon preached a month ago!

Then many students add to the difficulties of the situation another complication—they attempt a feat which is, psychologically, impossible. In order to be able to recall the facts or main points of the lecture many take notes: some indeed manage to take down the *ipsissima verba*—the exact words—of the speaker. Cæsar, it is said, was able to dictate one letter while writing another; but, as a rule, the ordinary person cannot attend effectively to more than one thing at a time. You cannot, therefore, take full notes and at the same time do justice to the lecture. There is bound to be a leakage somewhere. If your main attention is given to scampering after the lecturer, taking down, in longhand or in shorthand, his every phrase, you are simply thwarting the whole intention of the lecturer as a teacher—which is to interest you in the argument and to get you to assimilate the ideas which he is endeavouring to present to your consciousness. The

lecture demands your *focussed* attention ; if you are busily engaged in writing, you can only give the argument a *marginal* attention. Yet the lecture method still holds the field as the main method of instruction in our universities and colleges. The defence advanced in its behalf is that at this stage the students are sufficiently mature to benefit by it : their previous education has given them the necessary stock of relative ideas and the power of sustained reasoning about those ideas. Whatever cogency there may be in this argument, the method, especially as used in these august temples of learning, stands condemned to-day by the sterility of its results.

If in some degree the method is suited to the capacities of advanced students, it cannot profitably be employed in the education of the developing child. Simple telling must be, of course, an essential part of the teacher's work ; but when the telling is too prolonged, or of such a character as to amount to lecturing, the teacher who employs the method is missing the main aim of all teaching. For the great defect of the method is that it entirely fails to ensure that the pupil is following step by step the teacher's presentation of facts and reasons, and unless the student takes these steps himself he cannot be considered as under a process of education at all. If the lecturer does not frequently interrupt the flow of his argument at suitable places in order to question the pupils, and so to *test* the activity of their minds, he can have little warrant for believing that their minds are active in the

direction he desires. In most cases the pupil remains merely passive. When the subject is in any degree abstract or technical, and the teacher does not care to define his terms with clearness and precision, he might just as well lecture in a foreign language.

The particular case for us, however, to consider is this: Has the method of the lecture any place in the continuation school? It may be said at once that except for general purposes, mainly recreative and hortatory, the lecture method should be eschewed in the education of young people under eighteen years of age. For up till that age the minds of our pupils are not sufficiently developed to benefit by the rigorous logical treatment which characterises the lecture as a method. In our continuation classes the lecture method has been employed too much, especially by the non-professional teacher. The temptation to employ it is great. It seems so direct and so economical both of time and effort; such an easy method of imparting information and of overtaking a syllabus!

Some suggestions may be made towards remedying the defects of the method.

(1) The duration of 'lecturing' should be short. The lecturer should frequently pause in order to question the class—to make certain that they are being carried along in the same stream of thought as himself. If short periods of lecturing are thus alternated with periods of discussion, the worst defects of the method disappears. (2) With a view to focussing discussion on the critical or the obscure points, the students should make *short*

notes. (3) In order that the lecture may be recalled and used as a centre of reference, each member of the class should be supplied with a short summary. A better plan would be to supply the matter of the lectures in the form of a text-book. The student would then be able to read over the lecture before entering the lecture-room and to make a note of any doubtful or obscure points which might furnish matter for discussion in the period left available for this purpose at the end of the lecture. He would be relieved from the wasteful and irksome necessity of making lengthy but imperfect notes, and would be able to concentrate his whole attention upon the subject-matter and at the same time to reap any benefit that might accrue from the lecturer's *personality*. How much the personal note counts in teaching you need hardly be told (see p. 143). The personality of the lecturer gives 'atmosphere' to the lecture, and this atmosphere cannot be transferred to a note-book. Even the lecturer's exact meaning is rarely adequately expressed by the printed sentence, but depends upon the living voice with its intonation and nicely graded stresses, and upon the intimate, significant gestures with which all good delivery is accompanied. When the student is obliged to sit in a cramped attitude scribbling notes, he misses much of these very important elements. Very often he might just as well be subjected to the fluency of a gramophone.

CHAPTER VII

METHODS OF TEACHING (*continued*)

TEACHING AS CAUSING TO LEARN

THE danger involved in using a pure method of exposition like the lecture method—a method of continuous direct address—is that in a short time the pupil lapses into a state of dull passivity. Such a method is thus liable to defeat the main aim of teaching, which is to keep the minds of our pupils in a state of healthy activity. Now, what are the means at a teacher's disposal by which he can *test* whether or not a pupil's mind is at any moment actively engaged with the material which is being presented for assimilation? Obviously, the teacher can best test by *questioning*. The answer is the evidence which the pupil produces of his mental activity, and is a guarantee that he really is, and does not merely appear to be, under a process of education. Regarded simply as a sign of activity, even a wrong answer is better than none at all.

The method of teaching by question and answer meets all the defects of the lecture method. By using it the teacher can immediately discover whether he is being understood and whether the

instruction is suited to the pupils' wants and powers ; he has also some warrant for believing that the matter of his teaching is being absorbed into the very tissue of the pupils' minds. But the method has other advantages : it furnishes the teacher with an instrument by which at any stage he can *gauge* the pupils' progress and attainments. It thereby enables him to graduate the amount and the quality of mental work to the capacity of the pupil. But above all, in the hands of a skilful and judicious teacher, it can do much to secure the very benefit which is supposed to be the peculiar merit of the heuristic and practical methods : it can be used to lead the pupil *to acquire knowledge for himself*. It was in this way that the method was used by the Greek philosopher Socrates to teach the opinionative Athenians that in many matters where they pretended knowledge they were really ignorant. The method adopted by Socrates to expose a fallacy or to reveal a truth was to require his victim to answer a series of skilfully framed questions. For this reason 'the Socratic method' is a name sometimes given to the method of teaching by question and answer. Teachers may occasionally amuse themselves by attempting to imitate the method of the Athenian sage ; but were they to make a practice of it, it is to be feared that they would before long be dismissed from their posts for incapacity, even if the hostility of exasperated pupils did not more quickly effect the same result.

You may be interested to hear what the method as employed by Socrates was like. Meno, a pupil of

Socrates, after spending a bad quarter of an hour with the philosopher, has just complained of what he calls the negative character of his teaching.

'Why, Socrates,' said he, 'you remind me of that broad sea-fish, called the torpedo, which produces a numbness in the person who approaches and touches it! For, in truth, I seem benumbed both in mind and mouth, and I know not what to reply to you, and yet I have often spoken on this subject with great fluency and success.'

In reply, Socrates says little, but calls to him Meno's attendant, a young slave-boy, and begins to question him.

'My boy, do you know what figure this is?' (Drawing a square upon the ground with a stick.)

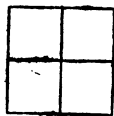


FIG. 3.

'Oh yes. It is a square.'

'What do you notice about these lines?' (Tracing them.)

'That all four are equal.'

'Could there be another square like this, only larger or less?'

'Certainly.'

'Suppose this line (pointing to one of the sides) is two feet long, how many square feet will there be in the whole?'

'Twice two.'

'How many is that?'

'Four.'

'Will it be possible to have another space twice this size?'

'Yes.'

'How many square feet will it contain?'

'Eight.'

'Then how long will the side of such space be?'

'It is plain that it will be twice the length.'

'You see, Meno, that I teach this boy nothing; I only question him. And now he thinks he knows the right answer to my question. But does he really know?'

'Certainly not,' replied Meno.

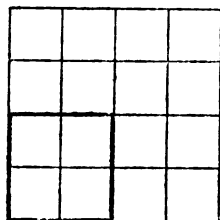


FIG. 4.

'Let us return to him again.'

'My boy, you say that from a line of four feet long there will be produced a space of eight square feet. Is it so?'

'Yes, Socrates, I think so.'

'Let us try, then.' (He prolongs the line to double the length.)

'Is this the line you mean?'

'Certainly.' (He completes the square.)

'How large is become the whole space?'

'Why, it is four times as large.'

'How many square feet does it contain?'

'Sixteen.'

'How many ought double the square to contain?'

'Eight.'

After a few more questions the lad suggests that the line should be three feet long, since four feet are too much.

'If, then, it be three feet, we will add the half of the first line to it, shall we?'

'Yes.' (He draws the whole square on a line of three feet.)

'Now, if the first square we drew contained twice two feet, and the second four times four feet, how many does the last contain?'

'Three times three, Socrates.'

'And how many ought it to contain?'

'Only eight, or one less than nine.'

'Well, now, since this is not the line on which to draw the square we wanted, tell me how long it should be?'

'Indeed, sir, I don't know.'

'Now observe, Meno, what has happened to this boy; you see, he did not know at first, neither does he yet know. But he then answered boldly, because he fancied he knew. Now he is quite at a loss; and, though he is still as ignorant as before, he does not think he knows.'

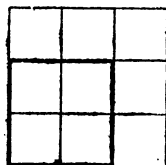


FIG. 5.

Meno replies: 'What you say is quite true, Socrates.'

'Is he not, then, in a better state now, in respect to the matter of which he was ignorant?'

'Most assuredly he is.'

'In causing him to be thus at a loss, and in benumbing him like a torpedo, have we done him any harm?'

'None, certainly.'

'We have at least made some progress towards finding out his true position. For now, knowing nothing, he is more likely to inquire and search for himself.'

In the Meno dialogue, you will observe how skilfully Socrates has arranged his questions in such a sequence that at the close of the argument the pupil has been led to the conclusion at which Socrates desired him to arrive. The result, moreover, is obtained without any direct instruction from the philosopher. You will note, too, that Socratic teaching is inductive in character. The slave-boy is made (1) to observe and (2) to infer. When the boy makes a wrong inference, Socrates does not immediately correct him: he merely uses the false conclusion so as to lead the boy to another conclusion which manifestly contradicts a previous statement. It was the aim of Socrates to show his victims that they knew nothing. He merely put them in the way of learning truth. It was no part of his aim to convey information to his hearers.

The question arises: Can the Socratic method be employed to convey information? It is clear that no amount of questioning can ever draw out from pupils facts which they have never learned or which cannot possibly lie within their area of observation. Skilful questioning can, of course, stimulate observation in some desired direction and thus afford the pupil at least an opportunity of discovering truth for himself. That is to say, Socratic questioning could be employed to suggest lines of observation along which new facts of knowledge might be garnered by the learner. Its proper province lies, therefore, in the study of the natural sciences, where it becomes the main auxiliary of the heuristic teacher.

The method of question and answer, of which the Socratic method is a special form, has, then, this very important limitation: it cannot be used to impart new information. It is one of the tritest of pedagogical sayings that 'telling is not teaching'; but the apophthegm merely expresses a partial truth in a negative way. Telling is, in truth, a very important part of teaching. If there is any such thing as a science of teaching it might, in fact, be defined as *the science which describes what to tell, when to tell, and how to tell; and teaching as the art of telling at the right time, in the right way.* When we tell so that we cause another to learn or to know, then we are teaching; but, be it noted, telling is not teaching unless, as the result of the telling, the pupil learns. Further, telling only becomes teaching after a period of preparation, after the teacher has prepared the way for learning. That was what Socrates set himself to do—to prepare the way.

THE DIALECTIC METHOD

It will appear, then, that the question-and-answer method cannot be employed as the sole method of teaching: it must be combined with a certain amount of direct telling. We should question to find out how much the pupil already knows about the subject of instruction, and to guide and stimulate him along definite lines of inquiry. Alternating with the questioning there should be an amount of direct telling. The telling as a rule should follow a series of questions in order

to give the pupil the information which he cannot discover for himself, or to thread together in a concise, logical statement the various items of information which have just been discussed by teacher and pupils.

There is no generally accepted name for the mixed method of teaching, which is the result of a compromise between the lecture method and the question-and-answer method. In these lectures we shall use the name dialectic method—that is, method by *discussion*—for the union of the two methods.

We have now discussed the chief methods of teaching. They are not, of course, distinct methods at all. Each method is not a method *sui generis*: the cross division is apparent. But each has its characteristic feature derived from the relative shares taken by pupil and teacher in the educative process. Note also that the methods are more methods of presentation than of teaching. That is to say, they are mainly taken up with describing the teacher's attitude and the amount of activity he displays. They do not describe the inner nature of the learning process. There is only one method which does that, the inductive-deductive method.

It remains for us now to inquire which of these four or five methods is most suitable for continuation class work. The governing consideration here must be the nature and attainments of the pupils who form the classes. First of all, you must remember that the majority of your pupils are adoles-

cent, and, in the second place, that they are now beyond the early formative stage of mental development. The first consideration indicates that the method which was most suitable in the elementary school, i.e. the dialectic method, has not the same cogency in the continuation school; and the second consideration implies that the teacher is no longer under the same necessity of adhering strictly to the psychological order of instruction. The onset of adolescence is marked by great changes in the mental attitude of the pupil. Certain instinctive tendencies, e.g. love, jealousy, emulation, previously latent, now clamour for expression. The reign of emotion has commenced. The instinct of *curiosity* is especially strong, and the teacher must be on the alert to allow this instinct proper scope for its legitimate exercise. The rôles of teacher and pupil may sometimes be reversed under the promptings of this instinct, and the teacher may find himself the questioned instead of the questioner. Strangely enough, however, the operation of the instinct of curiosity is frequently more than counter-balanced by the functioning of another instinctive tendency or emotion—namely, sex-reticence, commonly called modesty or bashfulness. The functioning of this instinct is frequently so strong that it is exceedingly difficult to get the pupils of a continuation class to be responsive at all. It may happen, then, that the pupils of a continuation class are at one and the same time extremely curious and extremely reticent. Present-day conditions of continuation teaching also add this further

complication to a difficult position—the pupils often come to the classes in a state of physical and mental exhaustion.

These are some of the conditions amid which you are asked to employ one or other of the methods of teaching. Which is it to be? Keeping in mind the stage of development which your pupils have reached, you will arrive at a proper decision if you next consider the special *aim* which you have in view in teaching your subject. Is your subject book-keeping, shorthand, business procedure, or any one of the subjects of the commercial course? Here I hope your aim will be a two-fold one: not merely to give your pupils a routine efficiency in the practice of the art of book-keeping or of business procedure, but also to make that practice *intelligent*: to give your pupils the power of discussing with insight the underlying principles and derived rules, and in their practice to leave them with some power of initiative. The method which can best secure such a result is the dialectic method, the combination of questioning and direct exposition. Hitherto, the method of teaching the subjects of the commercial course has been too predominantly expository, resulting in a short time in dullness and staleness and in sheer waste of teaching effort.

Does your subject belong to the technical or the industrial group—say, bookbinding, boot-making, upholstery, or dressmaking? Here, again, I hope your aim will not be single and merely utilitarian, aiming at the acquisition only of skill. If your aim be so limited, the most direct and

economical method you can employ will be the expository method with special emphasis on the practical exercises. But if your subject has any established principles, and if your aim has higher motives, surely the best means of interesting your pupils in those principles and of enthusing them with the ideals of your craft will be to employ most frequently the method which can best give them a rational grasp of principle and an insight into the ideal aspect of the work. Once again, you will employ the dialectic method. Indeed the dialectic method is rarely out of place, for it brings the teacher into the closest communion with his pupils and makes his teaching vital and stimulating.

One thing more. The methods you have been considering are *general* methods of procedure. It is conceivable that in the course of a single lesson an intelligent teacher will at different stages have occasion to use all the methods. On the other hand, he may find that it suits his purpose best to employ only one of them. It will all depend upon his aim. The essential matter is that he should constantly appeal to the intelligence of the pupil, and it will require all the tact, sympathy, and humour of which he is capable, to keep a class of continuation school pupils awake and responsive. The only method which he must not follow is a rule-of-thumb method—a danger to be specially guarded against in all forms of deductive teaching. If the teacher states a rule and proceeds to apply it, he should be very careful to ask the 'why' and 'wherefore' of each step.

MAXIMS OF TEACHING

In addition to the foregoing general methods, teaching as a practical art has several precepts which it is well you should consider. These maxims deal with the proper order of instruction and will be best understood if they are regarded as corollaries from the general theory of mental development sketched in Chapters III and IV. They are usually succinctly stated thus :—

1. Proceed from the known to the unknown.
2. Proceed from the easy to the more difficult.
3. Proceed from the concrete to the abstract.
4. Proceed from the empirical to the rational.
5. Proceed from the simple to the complex.
6. Proceed from the indefinite to the definite.

Now, while there is a tendency in our day to regard these maxims as the trite precepts of an obsolescent pedagogy, a careful analysis of their meaning will prove that the somewhat vague guidance which they offer is, nevertheless, quite in harmony with the teaching of psychology. They are more than truisms. Each of them is, in fact, an attempt to render explicit a certain phase of the one inductive-deductive process of development. Considered collectively, the demands which the maxims make are plainly incompatible: they cannot all be applied at one and the same time or with regard to the same bit of instruction. But with regard to any one lesson of a well-defined type—say, an inductive lesson or a deductive

lesson—one or more of the maxims may certainly be applied. Considered either separately or collectively, if the teacher accept the maxims too literally, they will be found to be merely directive in their function and to afford hardly any practical guidance. Some seem to require re-statement and amplification. It is not easy, for instance, to see how a teacher can do otherwise than 'proceed from the known to the unknown,' unless it be to make confusion worse confounded. What is meant is that the teacher must make use of what the pupil already knows in order to increase that knowledge, to fill up the concept. The teacher makes war upon ignorance from the territory of knowledge—he proceeds from the relatively known to the more unknown.

Consider next the maxim 'Proceed from the easy to the more difficult.' This injunction seems the merest truism, and yet in practice it will be found sometimes advantageous to tackle a real difficulty first with the expectation that the easier task will be of the nature of recreation. It is certainly a plan we often follow in real life. Many of us prefer to tackle the 'stiff job' first and get it done with.

With regard to the maxim 'Proceed from the concrete to the abstract,' it should be plain that it is quite impossible to apply this maxim uniformly and indiscriminately. As a rule, we do start with the concrete and by analysis arrive at the abstract. But this does not complete the process. To consolidate what we have taught, we must teach other

lessons in which, by reversing the order, we use the general law to explain the concrete instance: we 'proceed from the abstract to the concrete.' A similar criticism may be urged against the maxim 'Proceed from the empirical to the rational.' Especially in lessons inculcating moral truths, for instance, we usually lay down the law at a very early stage and afterwards proceed to illustrate with instances. 'Love thy neighbour as thyself' is a command imposed upon us as a moral duty. We do not wait until the child builds up a concept of altruism or of charity before we ask him to do kind actions. We have warrant for assuming that the child will understand the law imposed upon him, because the obligation to obey moral laws is part of the civilisation into which he is born; and the child, as the inheritor of the accumulated experience of mankind, has been learning the lessons of duty since the birth of the human race.

With regard to the maxim 'Proceed from the simple to the complex,' as long as no strain is put upon the words 'simple' and 'complex,' the truth of the maxim seems plain enough. But as soon as we begin to interpret the word 'simple' our troubles commence. For the truth is that the so-called 'simple' thing is always a complex of qualities and properties, and is not recognised as 'simple' until it has been first analysed into its properties and qualities, and these have been again synthesised into the unit we recognise as 'simple.' So that in learning anything it is always a *complex* we begin with.

Lastly, the maxim ' Proceed from the indefinite to the definite ' seems somewhat vague. What it means is that it should be the teacher's aim to make what is indefinite more definite ; or, more simply, to teach so that at the end of a process of instruction the pupil's views will be clearer with regard to the subject of instruction than at the beginning. The advice sounds fatuous enough.

It is necessary to refer in a sentence or two to the use of these maxims in practical teaching. You will find it very difficult to apply the precepts when you are engaged in the actual conduct of a lesson. Indeed, if at such a time you think of them at all, they are likely to be more of a hindrance than a help. Like Meno's torpedo, they are apt to benumb or paralyse the young teacher who allows himself to be tormented with any suspicion that he may not be teaching in accordance with their behests. It will afford you some relief to know that, in front of a class, ninety-nine teachers out of a hundred wisely forget all about them.

Nevertheless, the maxims, though their place is in the background of teaching, have some title to respect as a code of doctrine. They should be considered as secondary principles on which the teacher may with some warrant base the general plan of a lesson. Though their application is limited, they serve as guide-posts and indicate conditions of success in certain circumstances. They still stand as criteria of correct method : at least they furnish a standard of doctrine, and any standard is better than none at all. Without some such

standard, your practice is likely to remain merely empirical, and any rules which you form for yourselves from your untutored experience will have the sanction only of expediency or of your own personal foibles and prejudices. Your rules will be makeshifts only.

CHAPTER VIII

THE FORMAL STEPS IN TEACHING

WE have seen that the indefiniteness of the traditional maxims makes them very unsatisfactory guides in the actual practice of teaching. So far, neither our study of psychology nor of logic has furnished us with any detailed guidance for our procedure in the classroom. Indeed, to expect anything like detailed guidance from these sciences would be to misinterpret their function in teaching. Logic and psychology can only shed light upon the way in which knowledge is evolved from experience, or upon the way in which the mind grows. For detailed guidance we must rather look to the nature of the subject-matter of instruction and to the environment amid which teaching is carried on. Now the subjects considered necessary in a satisfactory day-school curriculum are already so numerous and so diverse in their nature that the average teacher is no longer considered competent to give instruction in them all. Specialists are more and more being called upon to teach certain subjects—for example, geography, physical exercises, singing, handicraft. Each of these subjects has a method of its own. Again, you will find that no

less than seventy subjects are included in the syllabus of the Edinburgh continuation classes. Now, even if there were some general method of teaching applicable to all subjects of instruction, some uniform mould into which all teaching could be cast, such a method would very obviously fail if it were in any degree rigid or inelastic. For the *conditions* under which the various subjects are taught, under which the same subject is sometimes taught, vary so much that only that method has any chance of success which admits of ready adjustment amid the complexity and variety of details. It cannot be too strongly emphasised that *it is with details and in concrete situations that method has to do its work*. Critics of educational method too often write as if teaching were an operation conducted in a sort of vacuum; as if *one teacher one pupil, one item of knowledge*, and a rigid formula called a method, supposed in some vague way to connect these other factors, constituted the normal conditions of teaching. On the contrary, the teacher as a rule is required to exercise his art under conditions which render the application of any formula a very difficult, almost a futile, performance. He has to teach in all sorts of environment not one pupil, but frequently fifty or sixty, exhibiting the utmost diversity of attainment, temperament, and character.

In such a complex situation, is the teacher, then, to be left with no more definite guide than the general methods and the indefinite maxims we have been considering? Are these methods and

maxims all psychology and logic can do for us? A more definite guide is provided by what are known as the Formal Steps in teaching. We have already said that telling must remain an essential part of teaching; but in our criticism of a purely expository method, we pointed out that some teachers are apt to consider that the efficiency of their teaching is to be measured by the amount of talking they do. On the contrary, we have learned that the value of a teacher's work depends upon the amount of work done by the pupil, upon the amount of mental work evoked *in* the pupil. If you will keep in mind, then, that good teaching depends upon the amount of *learning* the pupil does, you will agree that rules for our guidance must be based upon the way the pupil learns. We are thrown back once more to consider how a mind develops, because the *order* of development will determine the order or method of teaching.

It will not be necessary to repeat the description of the learning process which we sketched in Chapters III and IV. It will serve our purpose if it is conceded that the general process is summed up in the statement that every bit of new knowledge is built up from, and can only be understood by the aid of, knowledge previously acquired. Now it is possible to distinguish in this process of development four well-marked steps or stages:—

First, the part which the old knowledge plays in helping us to understand the new.

Second, the part which the new knowledge plays while being joined or assimilated to the old.

Third, the part which the mind plays while this junction or fusion is taking place.

Fourth, the 'turning to use' or the utilisation of the new ideas formed as the result of this fusion or assimilation.

These four stages of development are quite in harmony with all that we have learned from our study of psychology, and it was upon such an analysis that Herbart based his well-known doctrine of the Formal Steps of Method, since known as the *Herbartian Formal Steps*. The steps are five in number :—

1. Preparation.
2. Presentation.
3. Association.
4. Generalisation.
5. Application.

They might be more explicitly expressed thus :—

1. Find out what knowledge the pupil already possesses about the subject of instruction.

2. Present the new material in such a way as to connect it with the old, employing vividness, recency, &c.

3. Get the pupil to compare the new with the old, employing the laws of association—similarity, contiguity, cause and effect.

4. See that the pupil understands the new standpoint reached.

5. Ask the pupil to apply the new knowledge he has acquired.

It would be a mistake to assume that the

formal steps constitute a scheme which can be uniformly applied to every lesson. They seem to map out a definite and orderly programme which the teacher, searching for practical guidance and embarrassed amid the claims of competing methods, hails with relief. But it is this cut-and-dry definiteness of the doctrine that constitutes its greatest defect as well as its chief merit.

The chief defect of the Herbartian scheme is that it reduces all teaching to one general form as if the mind had only one definite, fixed mode of growth. It is based upon a psychology which unduly emphasises the importance of knowledge, of intellect, and for the most part leaves out of account the part that emotion and action play in the development of the mental life. It seems to regard mind as if it were an individual affair developed in isolation and furnished with its material of growth mainly from an external physical world. The modern view is quite different. We now regard intellect as the *directive* force of mind, exerting a mediating influence between emotion on the one hand and will on the other. We are also inclined to attribute to our emotions and our instincts a much more important share in shaping the individual mind than the older psychology contemplated. Moreover, the ideas of heredity and evolution have altered the standpoint from which we view the development of mind. We do not any longer regard each child born into the world as a fresh creation. His equipment, mental and physical, is an inheritance from the race. And

his mind is more the product of the *social* than of the physical environment.¹

Whether this criticism be true or not, it is admitted that the Herbartian doctrine has been of great importance in education in drawing attention to the general order and manner in which knowledge can best be presented to the mind for assimilation. The *practical* importance of the scheme is undoubted : it typifies the reciprocal processes of teaching and learning, covering the familiar psychological laws. Theoretically at least, the doctrine of the formal steps furnishes the teacher with a method in which the sequence of steps is perfectly definite and which satisfies the conditions under which the selected material of instruction can best be assimilated.

But in actual practice the scheme cannot be applied with rigid precision. For if you consider the processes covered by the steps, you will agree that of the five steps, the third and fourth—namely, association and generalisation—are only indirectly and indefinitely under the teacher's control. In the process of education, the teacher's share is limited to three of the steps : (1) he attempts to prepare the pupils' minds for the reception and assimilation of new ideas ; (2) he presents the new material of knowledge in such order and manner as will best conduce to the most effective assimilation ; (3) he can make the pupils attempt to apply the knowledge which he has been inducing them to acquire. But consider the processes of

¹ John Dewey, *The School and the Child*, p. 109.

association and generalisation: how impotent the teacher is to control these! If we could observe the workings of another mind as we can the movements of carp and minnows in an aquarium, it might be possible to devise means for their regulation. But it is only by a licence of speech that we sometimes say we can read another's thought as 'in an open book.' Even the thoughts of our nearest and dearest friends remain in large measure hidden from us. This is what the philosopher means by the 'fundamental isolation of the human mind,' and what Arnold expresses in the lines:—

Yes, in the sea of life enisled,
 With echoing straits between us^T thrown,
 Dotting the shoreless watery wild,
 We mortal millions live *alone*.

The teacher *never* can be certain that the processes of association and generalisation have been active in the pupils' minds exactly in the manner he desires. If he could be sure of such a result, teaching would be a simple matter, a mechanical art. But it is precisely because the process of learning is so uniquely an affair of the learner that the teacher cannot impose his dicta upon the pupils. It is the volatility and elusiveness of mental elements beyond the teacher's control that make teaching such a difficult art.

It will be evident enough that the appeal which the teacher makes to the pupil as a learner—that is to say, when he seeks to make the pupil compare and generalise and, later, apply—will depend for its efficacy upon several conditions. The teacher's

appeal has the best chance of success if the following conditions have been satisfied :—

First, if he has prepared the way by finding out what previous knowledge the pupil possesses regarding the subject of instruction. He must first be able to answer the question : What do I know of my pupils' minds—of their aptitudes and contents ? By this preparation, he establishes the *proper points of contact*. This is the psychological problem which the teacher has to solve.

Second, if he has carefully selected material appropriate to the pupils' stage of development and having points of connection with the pupils' previous knowledge. This is the problem of curriculum.

Third, if he has determined the means by which he can best present the material so as to make it readily assimilable by the pupils' minds. This is the problem of method.

Upon the degree in which the teacher has considered these three problems depends the success of his teaching, and it is because the Herbartian steps imply and enforce such a consideration that for more than half a century they have enjoyed an almost sacrosanct authority in some schools. But as there were brave men before Agamemnon, so there were skilful teachers before Herbart laid down the principles of the art on a scientific basis ; for the fact of the matter is that, in all forms of teaching, the steps in some order or other are inevitable, and every successful teacher, will he, nill he, must follow them. In the words of Rein, the

doctrine of the five formal steps 'is nothing really new. When based on empiricism alone, it is the result not of psychologic knowledge, but of tact gained by experience which can produce no proof of its necessity. Through this Herbart-Ziller system of instruction, that indefinite feeling is developed into a clear, definite, and educational idea. Each single step in the psycho-synthetic building up of the system of education is given in detail and firmly based on psychologic law.'

THE FORMAL STEPS IN CONTINUATION CLASS TEACHING

It is necessary to say something regarding the place which the formal steps occupy in continuation class teaching. First of all, you should note that only in some instances can the steps be used as a *method-whole*. For example, in teaching first lessons on a new rule of grammar or arithmetic the whole series of steps may be traversed. But even in those cases, after the preliminary lessons, the main emphasis is laid upon the last step, application, successive lessons being taken up with it alone. Secondly, you will note that in many lessons, at most two of the steps are covered—usually preparation and presentation, or, it may be, presentation and application.

You will probably agree that in most lessons the teaching process is mainly judged by the success of the presentation. This leads us to observe, thirdly, that the success of the more difficult steps, association and generalisation, depends

entirely upon the measure in which the teacher employs the laws of recency, vividness, frequency, and novelty to enforce the presentation and to ensure the conditions of assimilation and perfect articulation of the new and the old material.

You will, however, best understand the part played by each of the steps in actual teaching if we regard the matter from the point of view of the *content* of instruction.

All lessons may be divided into four classes :—

1. Lessons taught for the purpose of widening or increasing knowledge. Lessons of information.

2. Lessons taught for the purpose of deepening knowledge, or of enabling the pupil to arrive at general truths. Inductive lessons.

3. Lessons taught for the purpose of enabling the pupil to apply general truths. Deductive lessons.

4. Lessons taught for the purpose of giving the pupil constructive and executive skill. Practical lessons.

With regard to the first two classes of lessons it will be plain that the only steps which can be employed are the first and second. If the teacher has prepared his lesson in consonance with the pupils' attainments, and has presented the new material as vividly as possible and with frequent repetition, he has done all that lies within his power to ensure that the pupil has had a good chance of assimilating the facts presented to his mind. More he cannot do, except to test by questioning whether

the pupil has succeeded or failed in assimilating the facts. It cannot be too clearly realised that it is always the pupil who takes the third and fourth steps.

It will be plain that many of the lessons appropriate to the primary school (lessons at first entirely on a sense or perceptual plane, later, on a conceptual plane) are covered by the first and second steps—preparation and presentation. Only in a few subjects—e.g. arithmetic, composition—can the fifth step be taken. In the continuation classes, in lessons of a cognate kind—e.g. in most of the subjects of the literary course—the teaching is confined to the same steps. While following the formal steps, the teacher will teach most profitably if he employs the dialectic method.

With regard to the third type of lessons—deductive lessons—numerous opportunities of teaching such lessons are provided in the continuation classes. For example, nearly all the lessons in book-keeping and shorthand are deductive lessons. Here the teacher explains a rule and proceeds to apply it. The explanation clearly covers both the steps of preparation and presentation. To make certain that the pupils understand the working of the rule, the teacher will question them, thus doing all that is possible to satisfy the requirements of the third and fourth steps. Finally, the teacher covers the fifth step by asking the pupils to work exercises embodying the formula with which the lesson deals. Once more, the dialectic method is best adapted to attain the end in view—the intelligent application of the rule.

With regard to the fourth type of lessons—that is, those which aim at developing skill in the execution of a piece of work—the members of this class, who are mostly technical experts, will be specially interested to learn to what extent the formal steps are applicable. Before we answer the question, let us consider the nature of the instruction you will be called upon to give.

In the first place, nearly all the subjects of the technical and industrial courses belong to the class of subjects known as ‘practical,’ to distinguish them from those which have mainly a cultural or disciplinary value. The practical subjects have generally a vocational aim, or at least a vocational bias. Many of them are ‘trade’ classes specially equipped for training apprentices in the rudiments and principles of their crafts and arts.

Also, most of the subjects are practical in a more direct sense than is indicated by their aim. Students join the classes of the technical and industrial courses in order ‘to make something,’ or to learn ‘to do’ something, and to have something tangible to show at the end of the session as the result of their efforts. The training which the students receive in these classes is not educational in the same sense as the training derived from the various forms of handicraft taught in the primary school. The aim of manual work in the day school is to train the pupils’ power of observation and concentration, and to develop a harmonious adjustment of their various motor activities. The activities of the students taking practical subjects

in the continuation classes are mainly imitative—that is, are directed towards reproducing some model under the guidance of an instructor. Good imitation, of course, involves close observation and sustained effort; but whereas in the primary school the aim of the handicraft teacher is to develop powers of observation and effort, in the continuation classes he uses these powers as means to more concrete ends. In the primary school developed powers are the goal of the teacher's efforts: in the continuation classes the powers which the primary school education is supposed to have developed become the means of purposeful expression. In the first case, power is the end; in the second, power is an instrument. Technical education, as distinguished from primary education, means the application of relatively developed powers to an understanding of the principles underlying the various industries and arts.

If, then, the activities of your pupils are to be occupied mainly with imitative and constructive exercises, how far can we employ the formal steps in teaching practical subjects? Obviously, unless we strain the meaning of the doctrine until it has lost all point, the formal steps can rarely be followed in their entirety in technical instruction. Some writers in protest against a pedantic ingenuity which would seek to interpret the Herbartian doctrine as a sequence of steps to be followed with a sort of clockwork precision in all kinds of instruction, go so far as to deny that the doctrine has any place at all in merely imitative lessons. But

to deny this is to forget the valid psychological laws on which the steps are based, and to assume that development has reached its zenith at the close of the primary school period. Such an assumption is surely wrong. Development probably goes on through the whole period of life and, except during the first seven years of a child's life, at no time so rapidly as during the years of adolescence. And throughout the whole life the mode of mental growth is *uniform*. The mind of a youth of sixteen grows in exactly the same way as the mind of a child of five, although it may be responsive to very different stimuli. Moreover, human imitation, unlike the instinctive imitation of birds—e.g. in nest-building—is dependent, if it is to be successful, upon close and accurate observation, involving discrimination and comparison of similars and dissimilars—the elements of judgment.

Lastly, it is desirable to protest strongly against the view that the exercises performed by the youths in the practical classes must be wholly imitative. Such an estimate is surely founded upon a low ideal of craftsmanship and of the dignity of all constructive effort. It is true that, in the early stages of any piece of work, while the pupil is acquiring sureness and deftness of touch and dexterity in handling tools, and learning the canons of procedure and taste laid down by the instructor, his attitude must be mainly docile: he will be content merely to imitate. We all know the man who remains at this stage: he is the ordinary skilled

tradesman as little different from his fellow artisan as one pea is different from a thousand others in the same basket. What we want to produce is a race of craftsmen who will not only conform to the standard of work expected in their craft, but who will have a power of initiative, of adaptation, and of origination. Such are the men who advance the standard of a craft, their example tending to raise the general standard to their own level of performance.

Keeping these considerations in view, we can now attempt to give a fuller answer to the question we raised as to the applicability of the formal steps in teaching practical subjects. So far as there is any incidental teaching of the usual perceptual or conceptual type to be done, the steps preparation and presentation can of course be followed: for example, in leading the students to *discuss* the necessity or the advantages of any special processes or apparatus. But as a rule the steps to be covered in any lesson whose aim is the development of practical skill are two in number, viz :—

1. A demonstration by the instructor of the actual processes to be gone through in the construction of the model or part of the model.

2. The reproduction of the model by the pupils themselves, on the lines laid down by the instructor.

Now, if you have a low ideal of your function as a teacher, you will be content in interpreting these steps to follow the practical method of Squeers (p. 96). It will suffice to say to your pupils: (1) Observe how I make this model; and (2) Do your best to imitate my example.

But if you have a higher ideal of your work and consider that your lesson has an educational as well as a practical aim, you will find that the following steps are necessary :—

1. A clear statement of aim. The teacher will show a finished model and explain its purpose.
2. A discussion carried on by the dialectic method regarding the adaptation of means to end.
3. A demonstration by the instructor of the actual process of construction.
4. The reproduction of the model by the pupil.
5. Criticism of the results.

In lessons designed to foster skill, these five steps may be substituted for the Herbartian steps. It is easy to trace a rough correspondence between the two systems. The statement of aim, the preliminary discussion, and the demonstration take the place of the preparation and the presentation; while the reproduction and criticism correspond to the steps association, generalisation, and application. It is important, however, to notice that while in lessons which aim at widening or in deepening knowledge the associations and generalisations formed by the pupils are *tested* by oral questioning and answering, and the teacher has to remain content with vague and ambiguous results, in lessons requiring a display of practical skill what corresponds to the associative and generalising processes obtains visible and concrete expression in the finished product of the pupil. This product is always plain and unambiguous in its accuracy or its inaccuracy, its truth or its untruth. It is in

this aspect of their work that teachers of practical subjects have a great advantage over the ordinary teacher. In practical work, the result of the pupil's effort is always visible in a fixed form. There can be no scamping of work, no slurring over of faults, no pretence without the teacher being instantly aware of the vicious propensity. As a learner, moreover, the pupil enjoys the advantage of being able to measure the progress he has made without awaiting the teacher's verdict. He can tell at once whether his result is true—whether his model is an accurate reproduction of the model or drawing before him.

It remains to inquire which of the general methods can be usefully employed in teaching practical subjects. Each method has a place at some stage or other. The *dialectic method* should be used throughout the whole lesson or at any stage of it wherever a fitting opportunity arises; but a word of warning is necessary here. In practical lessons, oral work can easily be overdone. Remember that the main consideration in such lessons is to encourage *activity*—that is, motor activity as the result of well-directed mental activity. It is the great merit of practical lessons conducted on good lines that the 'knowing' and the 'doing' are taught together. Emphasis, however, must be laid upon the 'doing.' The teacher must not be too prominent: he should be content to give only such guidance as is consistent with effectiveness.

The *heuristic method* can often be employed successfully with pupils who show signs of initiative

or who possess an original turn of mind. In employing the heuristic method, the teacher should be a directing force in the background rather than an aggressive instructor seeking to impose his doctrines upon the pupil. In early imitative lessons dogmatic instruction is quite in place if the teacher desires from his pupils identical or uniform reproductions of the model set for copying. But at a more advanced stage, in lessons where the pupil may with safety be left to his own devices and is encouraged to treat the material with some originality, the teacher's activity should be less obtrusive. In lessons of origination, as distinguished from lessons of initiation—for example, in the advanced stages of design, millinery, dressmaking, cabinet-making, tinsmith work—the pupil may with great advantage be left to solve the problem of adapting the means at his disposal to the end he has in view.

Lastly, a purely *expository* method may be occasionally employed with advanced students who are already familiar with the principles and formulæ of the subject. But the exposition should never be too prolonged. There should be frequent breaks in it to allow of an interchange of opinion between teacher and pupil.

VALUE OF PRACTICAL WORK

It will be quite in place to say something at this stage regarding the value of practical work in education. Ruskin says: 'Let a youth once learn to take a straight shaving off a plank, or draw a fine curve without faltering, or lay a brick level in its

mortar, and he has learned a multitude of other matters which no lips of man could ever teach him.' Those of you who can recall some experience of your boyhood or girlhood, when your whole soul was absorbed in some bit of constructive work, will admit the truth of what Ruskin says. Who amongst you as a boy has not tried to fashion a boat, or, as a girl, to dress a doll? When finished, your boat was in all likelihood most unstable, and your doll but badly dressed. But the experience you gained in building the boat, or in dressing the doll, the sense of mastery and of self-reliance you acquired, and the spirit of free inquiry thus engendered, were probably of more value to you than all the knowledge you imbibed during a term at school.

The value of practical work has been well expressed by William James: 'Laboratory work and shop work engender a habit of observation, a knowledge of the difference between accuracy and vagueness, and an insight into Nature's complexity and into the inadequacy of all abstract verbal accounts of real phenomena which, once wrought into the mind, remain there as lifelong possessions. They confer precision: because, if you are doing a thing, you must do it definitely right or definitely wrong. They give honesty: for when you express yourself by making things, and not by using words, it becomes impossible to dissimulate your vagueness or ignorance by ambiguity. They beget a habit of self-reliance: they keep the interest and attention always

cheerfully engaged and reduce the teacher's disciplinary functions to a minimum.'¹

Our survey of the general principles of method is now concluded. In the lectures which are to follow you will be listening principally to suggestions and hints intended to guide you in your work as practical teachers. These rules for practical guidance form the *technique of teaching*, but you are not to confuse them with the general principles of method.

• THE TEACHER'S ATTITUDE TO METHOD

If our lectures up to this point have taught you anything, it should be this—that method is exceedingly flexible, and that there may be many roads to the same goal. You must bear in mind that in education formal rules must be applied with the same care and judgment as a medical man shows in diagnosing a disease. Careful observation, experiment, and cautious induction are as necessary in teaching as in any other scientific task. Principles are required rather than rules and devices based upon empirical knowledge. A grasp of these principles will give you the proper point of view from which to regard the task that lies in front of you. The chief value of method is just this—it enables the teacher to orientate himself in actual practice. Method is to the teacher what the compass is to the mariner: without a knowledge of method, he is like a ship without compass or rudder adrift upon uncharted seas.

¹ *Talks to Teachers.*

THE ART OF TEACHING

The principles we have been considering may be regarded as constituting the science of teaching; but the art of teaching does not consist merely in applying principles and rules of method. *The art of teaching comprehends ALL the means by which a teacher arouses and sustains the INTEREST of a class.* Besides complying with the underlying psychological laws, the successful teacher must be equipped with certain personal attributes, the sum of which we call his *personality*. You may come to the work armed with a full magazine of pedagogical maxims and fired with the warmest enthusiasms and yet remain more or less a failure as a teacher if Nature has not endowed you with just those gifts of personality which are always to be found in the efficient teacher. As you will discover for yourselves by painful experience, when you stand in front of a class for the first time, all the methods and maxims of teaching you have studied with so much anxious care will fall from you like a garment and the only support you can rely upon at such a moment of crisis will be your own naked personality. Do not suppose, however, that personality can ever be a substitute for method. It is a common experience, indeed, to find that teachers who are weak in methodical procedure rather plume themselves upon their personality as if they expected this vague indefinable property, which they imagine themselves to possess, to work miracles. The man, they are fond of asserting, is

greater than his method. Some illustrious men of striking personality have, on the contrary, been somewhat weak teachers—for example, the great Lord Kelvin and Professor Blackie. Disillusionment was the portion of the student who expected to learn Greek from Blackie. The course was—Blackie: Greek was an incident!

It would be both useful and interesting if by an analysis we could reveal at least some of the qualities of personality which make for success in teaching. Teachers differ very greatly in the matter of endowments. Some excel by sheer physical prestige, charm of manner, grace of person; others by power of intellect, artistic skill, clearness of speech. Others, again, are distinguished by 'softer' qualities—enthusiasm, sympathy, winsomeness, geniality, humour, equability, sweet reasonableness. All these are most desirable attributes. Yet many of them may be found in teachers who are less than moderately successful in their profession. Wherein, then, lies the secret? The successful teacher, it would seem, must always have a certain *grittiness*, almost hardness, in the tissue of his nature: a certain stubbornness, amounting to masterfulness, 'bred in the bone' and hardly to be acquired, which enables him to establish and maintain a personal ascendancy over his pupils. In its ultimate analysis this hardness or grit will be found to be simply a *firm will*, and is in no way incompatible with the possession of any of the attractive qualities which we have just mentioned. An efficient teacher must be in truth, as in name, a *dominus*—a lord or a ruler.

But, on the other hand, this quality of masterfulness, arming the teaching with *prestige* when wisely used, may be, when present in excess, a poisonous vice instead of a redeeming virtue. The teacher then becomes the tyrant of the pupil's intellectual life. His too great self-assertiveness accompanied, as it usually is, by a boisterous voice and a hectoring manner, only serves to arouse in his pupils the instinct of flight and its kindred emotion—fear. Like deer, intimidated by the roar of the lion, they would fain flee; but since they cannot escape, they sit quiet and cowed in their seats, hypnotically stimulated, it may sometimes be, into a fictitious responsiveness, but in reality with all their natural, spontaneous activities partially paralysed. They remain during the lesson in a state of 'suggestibility,' a morbid condition.

What we call a good personality in class-teaching must then include, first and foremost, a firm will. As many of the other superior attributes as you can add, so much the better. But the firm will is seldom to be aggressively asserted: rather, the pupils should feel that it is held in reserve—a source of effortless strength, a persisting, resistless force.

You may ask: 'If the proper teaching temperament is wanting, can aptitude for the work be developed by any system of training?' Training, by supplying the would-be teacher with a whole armoury of devices, may sometimes help to disguise temperamental defects; but under the exacting tests of class management, the veneer of training

soon wears very thin. Pupils are quick to discover signs of 'softness,' and sometimes reveal an almost diabolical ingenuity in taking advantage of a teacher weak in discipline. It is very doubtful whether any system of training can give the necessary toughness of character if it is not a native endowment, but something very like it is sometimes engendered in our scholastic 'misfits' by the mere struggle for professional existence. These furnish the tragedies of the schoolroom.

It may be said that to be successful in the art of teaching three qualifications are necessary: (1) knowledge, (2) method, (3) personality. You can all make certain of an adequate equipment in the matter of knowledge and method. Though it is given to only one teacher in a thousand to possess the highest gifts of personality, which we call genius, yet if to a fairly stubborn will you can add sympathy, earnestness, tact, and faith in your mission you can scarcely fail to attain to a fair measure of success in teaching, even though your methods be inferior.

In conclusion, allow me to say that method is a good servant but a bad master. Mechanical method is one of the greatest dangers to which the trained teacher is exposed: he is apt to become the slave of method. He adopts certain methods early in his career, and afterwards rarely at all thinks about them. He gets into a groove and his teaching is apt to become mechanical and dead. A teacher may know all the rules, written and

unwritten ; but the wise teacher is he who knows when to free himself from their bondage and to allow his own initiative free range. The great thing is to keep *an open mind*—not to become thirled to any unchanging method. Do not, at any rate, make a fetish of method. Perhaps the attitude most conducive to a healthy buoyancy and elasticity of spirit is that of the heretic. Refuse to accept any methods as final, even when proposed with all the prestige of authority, until they have passed before the bar of your own judgment. See as many good teachers at their work as you can. Adopt from their methods what you think is good or what will suit your own circumstances or tastes or individuality. But remember that your own methods, carefully thought out and backed by the whole force of your personality, will serve *you* better than any borrowed ideals.

CHAPTER IX

CLASSROOM MANAGEMENT

So far, we have been dealing with *general* principles of method, and we have learned that these principles give only general guidance to the teacher. We have also shown that the validity of these methods depends upon the fact that they are based upon established psychological laws—upon the laws of mind-growth. We now proceed to discuss methods that have a different and more practical significance for the teacher. General methods deal with the modes in which the matter of instruction may be best assimilated by the learner, e.g. the inductive method, the deductive method, the heuristic method, the formal steps, and so on. The methods which are now to be reviewed form what is called the *technique of teaching*, and include those rules and devices which are generally accepted as valid means for securing the best conditions, mainly external and circumstantial, under which instruction may be imparted. They are *not* derived deductively from any general theory of education, but are simply the fruits of observation and experience—inductions based on successful teaching practice. But even here it will be well to remember that these

rules should conform to law. The test of a good rule in method is that it agrees with the principles or laws of growth. It is a bad method which subverts or violates any of these laws. Theory and practice must harmonise even when we are dealing with the minor rules and devices of teaching.

Now when we come to deal with the rules for efficient class management, it will be allowed that good discipline is the first essential of effective class-teaching. No matter how much a teacher may know about his subject, no matter how excellent his methods may be, if he cannot keep good order in the classroom he will be more or less a failure as a teacher.

I have heard a successful schoolmaster assert that the essentials of method might be expressed on a sheet of note-paper. He reduces the rules to four :—

1. Get good order and *keep* it.
2. Know thoroughly the subject you propose to teach.
3. Speak distinctly, with a note of cheerfulness.
4. Use the blackboard freely.

The difficulty is that this expert begs the whole question. His are counsels of perfection. Before you can do all these things effectively, you have become an experienced teacher. His rules are really a statement of what method seeks to secure rather than the steps of method themselves. Yet you would do well to keep these rules in mind because they express in a concise way the essentials of efficient classroom *practice*.

You will note, however, that the necessity of securing good order stands first amongst the rules. It may safely be said that the failures of the teaching profession are found almost exclusively on the disciplinary side. On the other hand, if the teacher has a good power of control, no matter how defective his methods may be or how scanty his knowledge, there is always the possibility of his pupils making some progress. Now I wish I could tell you how to get good order and how to keep it, but there is no golden key of method in the form of rule or maxim that unlocks this door. I shall try to give some hints and suggestions that should be helpful, but you must not expect that any advice I may offer can be swallowed as a capsule of miraculous potency to be followed by wonderful results. The truth is that the secret of good discipline cannot be imparted, because it seems to lie deep rooted in personality, and if a person has not the gifts of tact, earnestness, and sincerity, together with a certain toughness of character, he lacks essential elements of that personal magnetism which attracts and holds the pupil. If he has not at least a fair modicum of these qualities, he will probably be an indifferent disciplinarian and an ineffective class-teacher.

Assuming that a teacher has the essential equipment of personal attributes, we shall suppose that he is put in charge of a continuation class for the first time. What hints can we offer that will help him in asserting and establishing his authority ?

1. He must *get* order. To ensure good order at the start, he must have everything ready for

the evening's work. All the material equipment should be at hand—pens, paper, books, apparatus, &c. The blackboard should be clean or should have upon it drawings, diagrams, or examples of exercises to be used in the course of the lesson.

The teacher should always be in the classroom before the pupils begin to arrive. There is nothing which undermines the authority of a teacher more than signs of carelessness or unpreparedness at the beginning of a lesson. Moreover, in making a point of being first in the room, he is setting a good example.

2. As soon as the pupils enter the room, the teacher must see that the pupils take their places in a quiet and orderly manner. Do not allow any noisy or disturbing movements. The pupils must be trained to realise that the reign of authority has commenced and must be respected as soon as they enter the classroom. But in this connection there is a difficulty in dealing with the adolescent of the continuation school. He cannot be treated as though he were an automaton worked by strings. He is indeed a very active agent, moved by his own affections, fretting under restraint and anxious to assert his individuality. And his individuality must not be altogether repressed, but it must be restrained within limits compatible with the welfare of the class as a whole. It would be injudicious, for instance, to treat him like a child by requiring him to keep perfectly silent during the few minutes before the lesson begins. But you must have your mind made up as to what are the limits of this

freedom, and on the very first occasion on which this limit is transgressed, you must assert yourself in no uncertain way. Now, I wish to be most emphatic at this point, for it has been my experience that the battle of discipline is fought at this early stage, in the first few minutes of a lesson. Every one admits the importance and the permanency of first impressions in ordinary life. They are often modified, but rarely substantially changed. It is a psychological fact that the first impression is usually the most vivid, and vividness is one of the conditions of permanency. Therefore, in this first assertion of your authority, act promptly and firmly. Speak in a dignified and firm tone. Do not bluster. Do not threaten. Do not show signs of weakness, of an irresolute will, of wavering. Maintain the note of firmness. Frequency of repetition, remember, is another psychological condition of permanency. It is just at this stage that the weak disciplinarian usually reveals himself. He is timid about asserting himself. He gives a little rope. He says to himself: 'The pupils will understand by and by that I *have* a temper, and then matters will arrange themselves.' Before he realises the danger he is incurring, the mischief has been done, and his troubles have commenced. The pupils have got their first psychological impression of their teacher, and it may cost him weeks and months of worry before he corrects and eradicates that first early impression. Truly, it is only after much tribulation that the weak disciplinarian enters into the teacher's heaven!

Now to ensure good order at the start, there are some conditions regarding the arrangement and disposition of your class which may be recommended for your observance. They may be called rules for the establishment of routine, or the routine factors of class management. (1) The pupils should occupy the same seats and desks each evening. If the room is not furnished with single desks, then the pupils should be seated at such a distance apart that they cannot disturb each other. (2) The previous condition fulfilled, arrange your class as compactly as possible: do not allow any stragglers round the margins or in corners of the room; inside the class, vacant places should indicate absent pupils. (3) It is a good—though not always an expedient—plan to seat the pupils in the alphabetic order of their names, corresponding to the order of names in the Register. This arrangement enables the teacher at once to name his pupils and to check the attendance. A gap in a row means that a pupil is absent. (4) Do not wait for late comers. There should be work on the blackboard, or indicated on the blackboard, so that the first comers may have some matter to engage their attention. Where a good deal of material has to be given out, the method of distribution should be organised from the start. You may choose some pupil or pupils to help you in the distribution: early arrivals might be utilised for this purpose, but do not leave this important part of organisation to mere chance. (5) As soon as the class has assembled and their attention is

engaged with material you have provided, mark the Register of Attendance. A glance at your class will show the vacant places. But if this is not possible—for example, in a crowded room—you might organise a service of censors who will quickly give you the names of the absentees. Make it a rule to mark and close the Register at the same times every evening.

Assuming that these early precautionary measures have secured an orderly start, we have next to consider how to *keep* order during the lesson. Here are two suggestions regarding the maintenance of order that has once been secured.

1. Keep the pupils busy. If there is any golden rule of class management, surely it is this. From our Sunday-school days we have been accustomed to believe that mischief and idle hands are connected by some force as inevitable as gravitation. But there is no reason why we should impute the blame to Satan. It is rather a case for practical psychology. The pupils' activities must have outlet and scope, and if not under the teacher's guidance and control they will certainly overflow in an undesired direction. Now, it is the teacher's business to direct the pupils' activities, and he can only do this if he comes to his work in a state of thorough preparation. He must have clearly thought out all the steps of his lesson before he appears in the classroom, must know exactly where difficulties will arise and how he will meet them. And he should have plenty of material ready to keep the pupils busily employed during the whole period of the lesson.

2. The teacher must be on the alert for the first signs of straying attention, and he must arrest these, not in a noisy way, but quietly, firmly, and promptly. Do not allow small symptoms of active inattention to pass unnoticed. Inattention is a most insidious thing of mushroom growth: from small beginnings it quickly and almost imperceptibly assumes disturbing proportions. It is in failing to recognise and to arrest the small beginnings of inattention that the inexperienced teacher reveals himself. A total inability to deal with such a situation marks the teacher who is weak and inept.

At the first sign, then, of inattention the teacher should adopt repressive measures. A glance, a nod, a pause, will often be sufficient: a mild reprimand may be necessary. But repressive measures in themselves will never secure attention. And it is of the very essence of good discipline that the class should be attentive and interested in the lesson. It is quite possible—indeed, it is not a rare occurrence—for a class to be quiet and orderly throughout a whole lesson and yet not be a well-disciplined class. Such a class is usually taught by a martinet, a teacher of strong and dominating temper who makes the mistake of considering that discipline is an end in itself, whereas discipline is only a means to an end. The class of such a teacher is usually dull and dead, lacking in spontaneity and initiative, though often well drilled in the mechanical and examinable parts of the curriculum. Merely repressive measures or drilling will not serve to keep a class attentive

to the matter in hand. It may be quiet, but not attentive. The quietude that accompanies vacant musing must not be mistaken for attention. On the contrary, such quietude is the mark of inattention. That is to say, a pupil's thoughts at such moments may be very far away from the actual lesson ; and it is this undemonstrative inattention that is most difficult to remedy. In looking for a remedy, I suggest that the teacher will often find that the source of the trouble lies in his own teaching. He fails to keep the class *attentive* because he fails to *interest* them. The whole problem of discipline centres in this question of *attention* and *interest*.

Now, have you ever paused to consider what attention is? It is the one thing we demand from our pupils when we are teaching them, and yet you would probably be puzzled, every one of you, if you were asked to define it. You need not be surprised if you fail to explain so common a term, for psychologists themselves are far from agreeing as to what attention is. Professor Bradley, for instance, denies that there is any separate mental activity at all that might be called attention. Ribot says that attention is only the feeling of strain that accompanies physical adjustment. Others maintain that it is consciousness working at focal intensity. It has also been treated as identical with will, and there are other views. None of the theories affords much help to the teacher and we need not discuss them. The diversity of opinion regarding the nature of attention is only mentioned now because it is important you

should realise that the problem of discipline, bound up as it is with the problem of attention, is far from being so easily solved as perhaps some of you supposed who have been accustomed to regard discipline simply as the acquiescence of an inferior in the mandates of a superior. Teachers should be good practical rule-of-thumb disciplinarians; but in addition to this practical skill, it is only in proportion as they realise the complexity of the problem of attention that they can hope to become disciplinarians in the best sense of that abused term.

After all, it does not greatly matter whether or not we can define attention. For we all know practically what it means to attend: it means to concentrate or 'fix' the mind on a thing or an aspect of a thing or a relation of things. Now there are at least two kinds of attention which the practical teacher ought to know about. Every one knows that some things are easily attended to and that other things are attended to with great difficulty. Every one also knows that the things attended to with difficulty are usually the things to which it is most important we should attend. The two kinds of attention roughly correspond with these two classes of things.

INVOLUNTARY ATTENTION

There are things to which you cannot help attending—for instance, the sound produced when I strike this table. No matter what you were thinking about a moment ago, the impact of the pointer upon

the table interrupted the current of your thoughts and may have diverted the stream into strange channels. It may have set some of you thinking about the one-o'clock gun or of bombs and zeppelins. When I ring this bell, perhaps the sound may start other bells ringing in your memory. You cannot prevent such associations being revived. Attention of this kind is called *involuntary* or *passive* attention. In the classroom you call it inattention or distraction. The opening of a door, the buzzing of a fly, a picture on the wall, the movement of an arm, or even an idea suggested by the lesson itself, may carry the student's thoughts far away from the subject under discussion and for the time being he is deaf to all the teacher is saying. Now, as far as the agencies causing distraction are outside of your control, you are helpless to prevent inattention; but a great many of them are well within your control.

Sources of distraction within the teacher's control :—

1. During the period of a lesson your classroom should be exclusively your own: only for very special reasons should your lesson be interrupted by intrusions, and you are well entitled to resent unnecessary visitation.

2. Inside your room there are several conditions which you can control :—

- (a) *Standpoint*.—For collective teaching, the whole class should be well within the area of vision, and the teacher should therefore take up a position far enough distant from the front benches to enable him to have

the whole class under observation. As soon as a teacher has become familiar with his pupils and relations of mutual confidence and trust have been established, great liberties may be taken in the matter of the teaching-position, but at first, at any rate, you should be careful to take up the proper position.

(b) *Teacher's manner and bearing.*—From the proper teaching-position you should not move to any marked extent. This does not mean that you are to assume a statuesque pose ; but within a small circle, by means of the natural and unforced gestures of hand and head, you can enforce the points of your lesson with sufficient animation and vividness. Teachers of a nervous temperament, who pace from side to side of a room like lions in a cage, are in themselves centres of distraction. You should avoid all fussiness of manner : be restrained, quiet, dignified. Try to lay aside all mannerisms or eccentricities of manner. The doctrine of interest is sometimes strained to mean a doctrine of entertainment, and not a few teachers try to stimulate flagging interest in an illegitimate way with irrelevant jokes. A joke or an anecdote that is relevant to the matter in hand, if it serves to stimulate interest in the right direction, is quite in keeping with the spirit of cheerfulness that should permeate your teaching, but indiscriminate joking is contrary to sound theory: it is distracting. It is true that it serves sometimes to give relief to a lesson, but it is a somewhat dangerous expedient.

(c) *Environment.*—The immediate environment is under your control. All distracting stimuli or

objects in the classroom that may make a powerful appeal to the pupil's attention, but that are not intrinsically related to your subject, should be removed out of sight, out of hearing, and—sometimes—out of smell! For example, you cannot expect a class studying book-keeping to give its undivided attention to the subject if half a dozen typewriters are clicking in the same room. In Prussia, this principle of economic teaching is carried to an extreme degree. In the ordinary classrooms the walls are kept quite bare and the furniture is of the simplest kind. All distracting stimuli are rigorously excluded. On the other hand, the Prussian authorities spare no expense in the equipment and furniture of rooms for the teaching of special subjects. For example, in the most modern schools rooms are specially equipped for the teaching of geography, history, literature. The geography room has a full equipment of maps, diagrams, photographs, globes, and meteorological apparatus. The history room has its equipment of charts, historical pictures, and portraits of famous persons. The literature room, too, has its appropriate atmosphere: it is embellished with busts and portraits of the great authors. But an equipment like this is not distracting, for such stimuli intensify interest in the right direction. The interests aroused, that is to say, are either *convergent* or *parallel*. Objects in a room distract the pupils' attention from the subject-matter of a lesson when they arouse *divergent* interest.

3. *The unruly pupil*.—The main cause of

distraction is an unruly member in the class itself. The teacher's manner of handling the unruly pupil is the accepted criterion of his disciplinary powers. Now, if the preceding suggestions have all been given effect to—that is, if you have carefully excluded all possible extraneous sources of distraction, and if in the early stages you have dealt firmly and promptly with all incipient disorder—the case of the unruly student may not arise. But until the millennium arrives it will be strange if the average continuation class teacher is not called upon from time to time to deal with such cases.

There is no doubt that a number of unfit pupils find their way into the continuation classes in spite of the precautions which are taken to ensure that they are qualified to derive benefit from the special subject that they propose to study. It too often happens, for instance, that Tom takes a certain class merely to fill up his programme or because his friends Dick and Harry are taking the same class. Now, although Tom may have started on his course with the best intentions, he finds at the end of a few weeks that his interest in the subject is at the lowest ebb and he begins to look around for means of amusement. Tom becomes at this stage a problem of imposing magnitude to the class-teacher. Accepting him as a typical case of a distracting medium, I propose to offer some suggestions either for Tom's cure or for Tom's elimination.

(1) Before the session has far advanced, if you have been on the alert, you will have noted the

probable source or sources of disaffection in your class. Signs of uneasiness, fretfulness, talkativeness, aimlessness will soon appear, and, as soon as you are quite certain of the source, you must act promptly. An abrupt pause, a minatory look, may not suffice on this occasion: you should reprimand the student quietly but firmly, in a tone of voice that shows you expect to be obeyed. Take the opportunity at the close of the lesson of speaking to the student in a friendly though monitory way, pointing out the probable consequences to him of continued ill-behaviour. Try to find out why his interest has ebbed, and endeavour to stimulate him to persevere afresh from a sense of duty. Appeal to his better nature and win him to your side if you can. You will remember that it is part of the responsibility you have undertaken to provide him with ideals of character and conduct.

(2) It is in handling a case like this that a teacher must exercise all his tact. Tactful dealing will often change an incipient rebel into a willing and helpful pupil. It is the silent, undemonstrative triumphs, won in the difficult field of discipline by quiet side talks and friendly advice, that, far more than success in examinations, should be the teacher's proudest boast. But, unfortunately, the teacher's warning goes unheeded sometimes, and the obstructive student of to-day returns unrepentant to-morrow. A flagrant breach of discipline—an act of rowdiness, unrestrained talking, annoyance of neighbours—calls for more drastic action on your

part. This time you must be as hard as adamant. Do not dismiss the offender from the room to loiter in a corridor till the end of the period : procedure of that sort is the mere negation of discipline. Send him to the head master, who will know how to deal with him.¹ If he returns to your class at all, it should only be with an apology for past transgressions and a promise of future good conduct. If this treatment proves ineffective, if his second offence is followed by a third, then you must finally insist upon the student's expulsion from your class. No other course is open to you, if you have any regard either for your own self-respect or for your ideal of efficiency as a teacher.

Now, if you have treated this first case with promptness, energy, and decision, you will probably have little difficulty on the score of discipline for the rest of the session. You will have taught your pupils that your authority is a real and not a fictitious thing, and that behind your authority there is *law*.

VOLUNTARY OR ACTIVE ATTENTION

Supposing, then, that we have eliminated the

¹ An appeal to the Head master should be made only in an exceptionally serious case, when the teacher is *in extremis*. Appeals too frequently made lose their force, and the teacher is written down as inept. Ordinary breaches of discipline will as a rule be remedied easily enough simply by an assertion of your personality. In more serious cases an effective plan is to communicate, or *threaten* to communicate, with the parent, or sometimes even with the employer.

chief distracting influences from the classroom, have we now obtained all the conditions for effective work? Provided that the pupils are *interested* in the subject, I think we may safely assume that we have all the conditions necessary for effective teaching. As long as the pupils are interested no question of discipline will arise. But if they are not interested they will not be attentive, although they may remain inoffensively quiet; and as long as the inattentive state persists, there are always possibilities of disorder and unrest. We are brought back once more to the question of attention and interest. Involuntary or passive attention, we have shown, is responsible for nearly all the disorders of the classroom. We proceed now to show how *voluntary* or *active* attention is the key to the whole problem of discipline.

You remember we said that the things we ought to attend to are often the things we have difficulty in attending to. If it costs us an effort to attend to something, we have voluntary attention. Most of the lower animals have the power of involuntary attention much more highly developed than man—that is, their senses of sight, hearing, smell, taste, and touch are in many cases much more acute, this high degree of development being essential to their self-preservation. That is the biological significance of involuntary attention. Involuntary attention operates on a low plane of intelligence, and with reference only to immediate needs. What distinguishes man from the more highly developed animals is his power of foresight, of adopting and

adapting means to attain some remote end. This is the function of voluntary attention.

We see, then, that involuntary attention is of the primitive sort so highly developed in animals, and in a high degree also in man. Automatically we respond to appeals to our senses made by external things. Involuntary attention is trigger-like in its mode of acting: we cannot help ourselves. Now, in a similar way, we are often pretty much at the mercy of the ideas that have *already found a place in the mind*. Suppose a street organ began to play just now under the windows of this room. You could not help giving it some attention. That would be involuntary attention; and if you find this lecture dull, you would go on attending to the music of the organ in spite of strong efforts to resist its attractiveness. But if you find the lecture *interesting*, if you find that it concerns you personally, you would soon fail to hear the organ, and you would hear only what I am saying. You will agree, moreover, that it requires an effort of *will* to attend to anything amid distracting surroundings. But after you have forced yourselves to attend for some time, the effort becomes easier: your ideas seem to be carried forward by their own momentum and to gather round them *other associated* ideas. *A cluster of associated ideas is called by the psychologists an apperceptive mass*, and the attention which you give to such a cluster of ideas, either while adding to its store or examining the relations of the ideas already in the cluster, is sometimes called *apperceptive attention*. What we are interested in we

attend to, and the business of the teacher is to present ideas to the mind of the student so that apperceptive attention will be aroused.

The term *interest* has been frequently used in this lecture. Like attention, it is not easily defined. But here, too, we all know practically what it is to be interested. I dare say you will agree that interest is a *feeling*—a pleasurable or painful feeling—that accompanies attention. We are interested in both pleasant and disagreeable things. Beautiful music or a beautiful picture is very attractive: a visit to the dentist is also very interesting and exciting. We take a pleasant interest in a wedding, a painful interest in a hanging. You will notice, too, how interdependent attention and interest are—they wax and wane together. The greater the attention you bestow upon anything the stronger is the resultant interest, and the interest thus evoked may in its turn reinforce the ensuing act of attention. Also, if you take an introspective glance at your mental state when you are interested, you will realise what is meant by self-activity. At such a moment you know that your mind is not asleep but very active. It is for this reason that interest is often called self-activity; and when you are told that it must be one of your aims, as teachers, constantly to stimulate the students' self-activity, the meaning is that you must keep them interested. While we are dealing with interest it is necessary to draw your attention to a distinction that is of great importance. You will find that your students are interested in

their work either for the sake of an immediate need or for the sake of a more remote end. A girl, for example, attends the millinery class in order to learn how to fashion and trim a hat which she hopes to wear next summer. Her interest in the initiatory steps, or in any of the principles that govern hat-construction, is only a second-hand or a *mediate* interest. But if she becomes interested in the problem of laying the foundation of a hat her interest has become *immediate*. If a boy attends the continuation classes for a third session, induced mainly by the hope of gaining a Burton Prize,¹ his interest in any subject is, at first, likely to be rather worthless, being only *mediate*; but if he becomes interested in the subject-matter of his course, he has passed from *mediate* to *immediate* interest. Your business is to arouse and sustain *immediate* interest.

The whole problem of successful teaching and of good discipline, then, comes to be *how to be interesting or how to arouse immediate interest*. We shall therefore proceed to enunciate some principles that must regulate your attitude as teachers striving to keep alive the interest of your class.

1. *First, there is the law of variety.*— You cannot attend to a single isolated thing for any length of time. Try to fix your attention on the hour-hand of your watch. You will find that the more you concentrate your attention upon it

¹ In Edinburgh a special prize, called a Burton Prize, is awarded to a student who attends the continuation classes for three consecutive sessions.

alone, the less interesting it becomes. So after a few seconds you will find yourself somewhat dazed with your efforts, just as the crystal-gazer sometimes stupefies himself into a hypnotic state. The attraction of the minute-pointer has already, I dare say, proved irresistible, and perhaps some of you have even allowed your attention to stray from the watch altogether and are now thinking of, or attending to, more interesting things usually associated with this evening hour. You cannot keep your attention from wandering. A recognition of this truth imposes upon the teacher the necessity of coming before his class with the matter of his lesson prepared in a chain or series of connected points. The law of variety does not mean that you are to present the pupils with a hotch-potch of disconnected items or tit-bits, though the doctrine is sometimes interpreted in this vicious sense. New things are, of course, always interesting; but if you are always talking about things that are entirely new, the pupils will soon show signs of fatigue. On the other hand, if you speak to them of things they are familiar with they will at once respond. Now, if you wish to use the principle of variety in the right way, you must not confine your teaching to either of these extremes—the entirely new or the perfectly familiar—but attempt to combine them. The old in a new setting or the new in an old setting is the arrangement that ensures interest.

2. *Next, there is the law of expectation.*—Advertisers understand the value of this principle. You

all know how full of suggestion bold head-lines on the placards of our newspapers can be! Not long ago you might have seen a large car parading our principal streets advertising the virtues of a certain patent medicine. The advertisements were successively revealed on rotating boards, and the spectator watched with fascinated interest for each fresh development. This element of expectation is very valuable in inductive and heuristic teaching.

3. *There is also the law of sympathy.*—No teacher can hope to be interesting who is not able to look at things from the pupils' point of view. The difference between a bore and an interesting person is that the bore speaks of everything from his own point of view, while the interesting person speaks of everything from the point of view of his listener. Now, to be a successful teacher, you should be able to take up the rôle of listener to your own arguments. You must be able to project yourself into your class. Take a seat amongst your pupils and try to follow your lesson from their point of view.

4. *Law of activity.*—You will remember that one definition of interest is self-activity. This affords us a practical hint for sustaining interest. You must secure the co-operation of the pupil in all that you do. Unless the pupil does his share, the work cannot really interest him. Now the practical expert is often criticised as a teacher because he too often fails to arouse in his pupils either a due amount, or the right kind, of activity. He is tempted to do too much for the pupil. In handicraft work too often he

takes the tools out of the pupil's hands and completes the exercise himself. In teaching commercial subjects he lectures too much. It is Thackeray who says that one way of being dull is to say all there is to be said on any subject. You should always leave a good deal for the pupil to do himself or to discover by his own efforts if you wish to maintain his interest at the degree of liveliness or intensity at which assimilation can only take place. Charges of 'spoon-feeding' are frequently levelled against modern education. Our pupils, the critics assert, are the victims of a 'soft pedagogy.' The criticism means that the teacher does too much, the pupil too little.

5. *Lastly, remember that interest is infectious.*—If you wish to interest your pupils, you yourself must be interested and try to communicate to them some of your enthusiasm and earnestness. The great teachers of the world have been men and women who, by the force of their example and personality rather than by systematic training, have inspired their disciples with their own high enthusiasms. Teachers are prone to magnify the importance of their methods; but you will retain the proper perspective if you keep in mind that methods are only means of arousing and sustaining interest. As soon as a class has become thoroughly interested, method falls into the background and remains there, directive but subservient. Arouse interest then and, with Othello, you may say—

This only is the witchcraft I have used.

SUMMARY

These suggestions about interest have been made because to tell a teacher to 'make the lesson interesting' is just as futile as to tell him to 'keep the pupils busy,' if you cannot show how it is to be done. You have already learned that you will probably succeed in keeping your pupils busy, if you come to the work in a state of thorough preparation with an intelligent anticipation of difficulties to be overcome. You will make the lesson interesting :—

1. If you have sufficient variety of relevant material.
2. If you arouse expectation of an end to be reached.
3. If you appreciate the difficulties from the pupils' point of view.
4. If you secure the pupils' co-operation.
5. If you are interested and enthusiastic yourself.

All the elements we have discussed in this lecture enter into the highly complex problem of discipline. The routine factors aim at securing the conditions of orderly work. The psychological factors involved in interest aim at securing efficiency in the purely educative process. Good discipline involves a recognition of the true relation of these factors—the routine and the psychological.

Allow me to add a few words as to the *aim of discipline*. Discipline, remember, is not an end in itself, but only a means to an end, and that end is the formation of right habits. Our life of action

is almost wholly governed, first, by our instincts and, secondly, by our habits. We inherit our instincts from our ancestors. In the evolutionary view they are complex systems of reflex, mechanical movements which, during the lifetime of the race, have been built up by the agency of natural selection. We are not responsible for our instincts. Habits,¹ on the other hand, are organised reactions on our environment built up during our own lifetime, and in so far as they are formed under our conscious direction and control, we must be held responsible for them. We form our own habits. Our adjustments to the world around us undergo modification and reconstruction; but after these adjustments have become fixed in their general mode of acting they are called our habits. And, once fixed, habits behave exactly like instincts—they run, like clock-work, automatically.

We agreed that the aim of education was social efficiency. We must train our children to fit efficiently into the social fabric. Now, social life is not a fixed but a progressive thing, ever evolving to higher stages. As it advances from the low planes of being on which mere animal life is conducted it tends to shed the instincts appropriate to the animal stage. The 'homing' instinct, for instance, so strong in bees, birds, and in many animals, has become atrophied in man. As soon as the savage learned to blaze a trail in the wilderness and to find his way by the light of reason, this instinct was no longer necessary for

¹ John Dewey, *The School and the Child*.

his preservation. During the course of time man has substituted for this 'sixth sense' all manner of mechanical or artificial devices—such as the beaten track, the highroad, the railway, the compass, the telephone, the aeroplane. All social improvements are in the same way artificial: they are the result of man's energy directed by his intelligence and operating upon his environment. Thus it comes about that civilisation tends to move farther and farther from the 'state of Nature'; and social life far from being a simple natural state has become a highly complex, artificial organisation. Each century and each generation produce new conditions of increasing complexity, and our great-grandchildren will probably conduct their lives in an environment that would seem wondrous strange to us. To cope with the new situations the individual must build up new systems of habits. His endowment of instincts would be utterly inadequate to deal with such situations. The instrument for building up new systems of habits is discipline. If you realise that the adult is for the most part a mere 'walking bundle of habits,' as William James¹ says, then you will appreciate the part that discipline should play in shaping the character and conduct of the young while in the plastic state.

Finally, let me emphasise the opening view that drill or 'good order' is not the whole of discipline. The centurion having under him soldiers who says to this man Go and he goeth, and to that man Come and he cometh, and to his servant Do this and

¹ *Talks to Teachers*, p. 77..

he doeth it, may not at all be a disciplinarian in the teaching sense, but merely a drill-sergeant. Mechanical routine is of course most important. Without routine, progress in the direction of habit-building is impossible ; but unless the teacher at the same time succeeds in stimulating the interest of the pupil he will probably fail to form in that pupil habits of *right* action. The sum of our habits is our *character*. It is in proportion as the teacher succeeds or fails in forming habits of right action, in forming a *good character*, that he succeeds or fails as a disciplinarian.

CHAPTER X

HOW TO PREPARE FOR THE TEACHING OF A LESSON

IN our last lecture we pointed out that the best way to maintain order during the course of a lesson is to keep the pupils busily occupied all the time with interesting material. We insisted also that the obligation to keep the pupils busy imposes upon the teacher the responsibility of careful preparation of the evening's work. We now proceed to deal with the essential features of an adequate preparation. It will not be out of place if we first make a few preliminary remarks about the meaning and value of preparation.

Conscientious preparation of work is a *sine qua non* of all successful teaching. In other words, the teacher cannot expect to reap the best fruits of his labour if he comes to the task unprepared himself. At the close of last lecture we emphasised the doctrine that the aim of all education is simply the formation of right habits ; and discipline, we said, is the instrument we use to form right habits in our pupils. Surely, then, every teacher, worthy of the name, who does not come to the work in the spirit of the time-server, will recognise that it is

only his duty so to discipline himself that he will acquire this vitally important habit of thorough preparation. Example is ever better than precept, and the value of a good example and the viciousness of a bad example are only seen in their full significance when we consider them in their relation to habit-forming.

If the teacher keeps this ideal of thorough preparation before himself, he will expect from his pupils also a high standard of preparation. In the present condition of organisation of continuation work, however, it would be cruel as well as futile to insist that students who come to their classes jaded and tired after their day's work should be able to con and rehearse a lesson with the same accuracy, or to show the same intelligent interest, as the pupils of the day school. The continuation class teacher works at present under a terribly heavy handicap of adverse conditions; but it is precisely because this is the case, because he is required to interest and stimulate jaded and tired minds, that the obligation rests upon him to make his teaching all the more interesting and stimulating. He can only do this by the most careful foresight and preparation. Only in this way can he hope to make some of the rough places smooth.

In addition to this high ethical ideal, it is of the utmost importance that from the very start the teacher should gain the pupil's confidence and respect. To secure these he must give evidence of knowing his business. This is exactly the standard which we demand in the ordinary affairs of life, and students

—even very young students—soon form wonderfully shrewd opinions as to a teacher's capability, and, like business people, they like to feel assured that they are getting their pound of flesh—or, at any rate, that they can get it if they want it. Let the pupils realise, then, that they are in safe hands, that you are a safe guide. If they feel that the teacher knows all the intricacies and difficulties of the road they are treading, the sense of security thus engendered helps them to concentrate their attention upon the task confronting them. A feeling of insecurity, on the other hand, is very distracting and unsettling, and is easily induced by symptoms of ignorance or of insufficient knowledge on the part of the teacher. Most teachers, when found wanting in this way, will have, let us trust, the courage and sincerity to admit their ignorance or their lack of ability to solve the difficulty. If such a teacher candidly says 'I don't know, but I shall find out,' the confidence of the class may be temporarily shaken, but may sooner or later be restored if the matter at issue is only a trivial detail and the teacher seeks the earliest opportunity of supplementing his knowledge. The pupils, at any rate, will respect the teacher's sincerity even though they suspect his incapacity. But if we have difficulty in defending the conscientious teacher who may occasionally be found wanting, what are we to say of the teacher who glosses his ignorance with a pretence of knowledge, who slurs over what he knows is a real difficulty with some nebulous explanation? Such pretence is immoral, and the teacher who practises it deserves no

better name than charlatan! Many an excellent teacher, conscientious as a rule in his preparation, sometimes finds himself, through some unforeseen accident, in a dubious position in front of his class. From such a position he must extricate himself as honestly as he can, but never at the loss of his own self-respect. He cannot afford to descend to deceit. He must remember that the law of habit-forming operates as inexorably in the case of the teacher as in the case of the pupil.

On mere grounds of expediency an adequate preparation is the best policy, for it is true economy. It saves much labour in the long run. A lesson that has been thoroughly worked out beforehand, clearly and definitely both in sections and in detail, not only affords the teacher something of the pride and pleasure that the artist feels in his work, but it is certain to have that quality of vividness which is so important as the first condition of permanency. The teacher, on the other hand, who comes to his work with little or no preparation, leaving both matter and method pretty much to chance, or to the inspiration of the moment, can only obtain results by relying upon the second condition of permanency—that is, frequency, or the frequent repetition of stimuli. He can only imperfectly obtain by repetition, with all its irksomeness and dullness, what the conscientious teacher often achieves by a single vivid presentation.

Again, it does not follow that because a teacher has many years of experience behind him he is no longer under the necessity of preparing for his work.

Certainly he is no longer under the same necessity ; but if he wishes to save himself from falling into mechanical ways of doing things, from adopting the fixed attitude that is inimical to progress, if he wishes to introduce into his teaching that freshness and variety and up-to-dateness which are essential to interest, he will be constantly revising both the methods and the material of his teaching. A distinguished professor of this city recently told me that he never delivers the same lecture twice. He often completely recasts it, changing the point of view, introducing fresh examples and illustrations drawn from the environment of his new students and, generally, bringing the lecture up to date. It is just such an ideal of efficiency that should stimulate every continuation class teacher to prepare thoroughly for his evening's work.

SOME FEATURES OF AN ADEQUATE PREPARATION

In preparing a lesson the teacher should first carefully consider the aim or purpose of the lesson. All teaching, of course, should be ' with a purpose ' ; but in addition to this general purpose each lesson should have a definite, specific aim. It may not always be possible to reach this goal within the limits of a single hour or evening, and in this event a subordinate aim will take the place of the ultimate one. Within the limits of a single lesson, however, the teacher should take care to cover the ground he has mapped out for himself. He will introduce the lesson with a statement of his aim. This whets that feeling of expectancy which is important for

interest, and at the same time sets limits to the scope of the lesson—in other words, it helps to keep the interest convergent. In making the statement of aim one danger has to be guarded against. It is contrary to the spirit and intention of inductive and heuristic teaching to make a too particular statement of aim, for this would tend to stifle that spirit of free inquiry and initiative which it is the special object of those methods to arouse. The statement of aim in such cases should merely describe the general scope of the lesson without indicating the exact conclusion to be reached. For example, suppose the lesson is on the decomposition of water into its constituent elements—hydrogen and oxygen: a sufficient statement of aim would be ‘to find out the chemical constituents of water.’ A bad statement would be ‘to analyse water into H_2O .’ In deductive teaching and in all lessons where the aim is the acquisition of greater skill or better technique—as in the trade classes—this caution is not necessary. A sufficient statement in these cases would be ‘We are going to learn how to do so and so to-night.’ For example, in woodwork, ‘We are going to learn how to make a mortise-and-tenon joint’; in building-construction, ‘We are going to deal with the principle of the Flemish bond.’

Having, then, a clear idea of the aim and scope of his lesson, the teacher will next look about him for suitable material. The teacher of a trade or technical class will have little difficulty here, for, his aim being a practical one, the material he em-

plays is nearly always concrete, and all he has to do is to have that material ready at hand and arranged in the order in which he will use it. The point to be emphasised is that he *has* it ready. It is a sign of very inadequate preparation when the teacher has to hunt about during the course of a lesson for a piece of mislaid or forgotten apparatus. Nothing can be more distracting or more demoralising to the discipline of a class. I have known a teacher, indeed, so careless in his preparation that he preferred to dispense with apparatus altogether. His plan was to say: '*Suppose* we have here a certain volume of oxygen and here the same volume of hydrogen. Now, *suppose* the two elements are brought into chemical fusion, what will happen?' He would proceed in the same strain throughout the period of the lesson, and used to defend his method, or want of method, by saying that it was only a clever and skilful teacher who could *keep on supposing* for sixty minutes, and that what we ought to train in our pupils is the scientific imagination! Needless to say the imagination of his pupils did not exercise itself with the slightest scientific bias. It employed itself in making paper darts converge in the direction of the imaginative demonstrator!

All apparatus necessary for the evening's work should be overhauled before the start. Especially, experiments should be carefully prepared to make certain that they will *work* properly. Diagrams should be at hand, and outlines, sketches, and plans ready on the blackboard for filling in.

If there is little difficulty in choosing material

for most of the trade and domestic classes, this is not the case with the commercial and some of the technical classes. In the first and second stages of shorthand, it may be that this difficulty does not occur, the amount of ground to be efficiently covered in a lesson being the only concern. But in such subjects as book-keeping and commercial procedure there is plenty of scope for an intelligent selection of material. The consideration that should guide the commercial teacher is, 'Is the material pertinent to the occupations of my pupils as well as suitable for my special purpose?' This imposes upon him the obligation of getting into close contact with the individuals who compose his class and of learning their dominant interests and needs. His lessons are therefore bound to vary from session to session. In order that the teacher may become cognisant of the claims of his individual pupils, continuation classes must of course be small. It is sometimes laid to the charge of the commercial expert that he is as much the slave of the text-book as the professional teacher who sometimes undertakes such work. Perhaps the large classes which the 'commercial' teacher is called upon to handle are responsible for this result, since with a large class it is difficult to see how anything but a *general* treatment is possible. And a general treatment is the text-book treatment.

While we are dealing with this question of the choice of material, it seems in place to say a word regarding the attitude of the professional teacher to this aspect of continuation work. There are

many things he may learn, even in method, from the expert who has not had the same systematic training in teaching but who has far greater practical knowledge of real affairs. The trained teacher is apt to be too complacent in his attitude to his work in the continuation classes. It is true that his training and experience qualify him to a great extent to handle the ordinary educative subjects of the continuation school with facility, dexterity, and effectiveness. But the methods suitable in dealing with young children are often out of place in dealing with the adolescent, and from this point of view he must revise his methods, if they are to be applicable to continuation work. He must learn, at any rate, to be practical in his aims, to draw his illustrations from really pertinent and substantial things, to keep in contact with the living world in all ways, and he must not rest content with text-book views of industry and commerce. In Switzerland the teacher who aims at a career in a commercial school must first spend a year in a business house.

Having determined what material is suitable, the teacher must next break up that material into suitable *sections*. In doing so, he must keep clearly in mind what is *essential* and *salient*, and take care that the essential and the salient are *vividly* presented. Very few lessons will contain more than three or four sections; but the important point to remember is that in these sections the items should not be disconnected, but arranged in a consistent logical sequence.

When you have divided your material into suitable sections, you have next to consider how much time you can devote to each section. The time, of course, will vary according to the importance and difficulty of the subject-matter. Unexpected difficulties are sure to occur which will compel you to give more time to a section than you had intended. But the main thing is that you should have a definite programme of work for each lesson, and to this programme you should adhere as closely as possible. It is only by adopting a definite plan that you will overtake with any measure of efficiency the syllabus of work provided for the session. And the syllabus itself, you must note, should be treated exactly like a lesson of larger scope, and should be divided into sections and lessons, the matter of the first section to be overtaken, say, in the first month, and so on. There will of course be a certain amount of elasticity in the division, but roughly you should be able to reckon your progress pretty much as you estimate by time-table the stages of a journey. For this purpose I would recommend the plan of dividing up at the beginning of a session the work to be overtaken during the session, and of outlining on a sheet of note-paper the scope and main features of each lesson. Stiff cards of postcard size are very convenient for this purpose. Some sixty cards will serve to cover the longest syllabus. Such a plan entails, of course, a good deal of trouble at the start ; but if you are to be engaged in teaching for some years, you will find that the time given to planning out your work has been most profitably spent. Besides being a good safe-guard against

falling into arrears, this method of postcard notes has the great merit of crystallising the teacher's knowledge of his subject with a definiteness which he only appreciates when he has tried it.

For want of some such method as I have suggested, a teacher of a business procedure class has been known to exhaust the syllabus in a couple of nights. On the other hand, for the same reason, some teachers never manage to cover the ground of the syllabus. Again, it seems not an uncommon attitude to regard a syllabus as a sort of code which has been drawn up to satisfy some merely theoretic need, and which may be light-heartedly neglected. Certainly, some teachers take great liberties with the prescribed course and even, sometimes, substitute one of their own. Now, either the syllabus has been drawn up on wrong lines or the teacher's attitude is wrong. Making the largest allowance for the teacher's individuality, but keeping in mind that the syllabus is generally the product of ripe experience and full knowledge, and therefore well within the compass of achievement, we must still insist that the syllabus should be substantially covered by the end of the session. The teacher who fails to do this has not exercised due foresight. And if individual teachers take into their own hands the reconstruction of the syllabus, organisation and correlation of work become impossible.

A last admonition must be given with regard to the preparation of a lesson. Always try to leave time at the end of a lesson for revisal. This revision helps to give the whole lesson its proper perspective, and at the same time emphasises what is most

important and pertinent. And once more, remember the psychological importance of frequency of repetition. What is true of the lesson, moreover, is also true of the whole session's work. There should be time left for a general review.

SOME FEATURES OF A GOOD PRESENTATION

If the teacher has carefully prepared his work along the lines that have been indicated, he has done his best to secure the conditions necessary for an effective presentation of the subject-matter. If only he can present the matter in a *vivid* way, with a due amount of *emphasis* and *repetition*, it is fairly certain that he will teach successfully. That is to say, his pupils will be *interested*, and so prepared to *assimilate* what he has to offer them. With regard to the first essential of vividness there are a few considerations to which your attention must be directed.

1. A lucid arrangement of the matter of the lesson is essential to vividness. Careful preparation should ensure this lucid arrangement; but at the same time you must realise that you can only make the most orderly arrangement lucid if you know how new knowledge is assimilated not so much by your own mind as by your pupils' minds. We have already discussed the associative process in a former lecture (Chapter III), and have learned how an analysis of the mental factors involved in that process furnishes the teacher with a method which has been summarised for you in a statement of the

Herbartian Formal Steps (Chapter VIII). I can only add here that your lesson will probably be lucid enough if it has been carefully prepared in the light of what you have learned concerning the nature and the limits of the formal steps. I have, however, prepared diagrams which may help



Diagram I.



Diagram II.

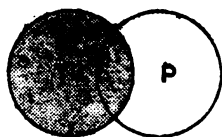


Diagram III.



Diagram IV.



Diagram V.

FIG. 6:

to make the meaning of the first two steps, preparation and presentation, a little clearer.

Diagram I represents the attitudes of a teacher and a pupil where neither teaching nor learning is possible, where there is absolutely no interest or knowledge in common. You can imagine such a situation if a mystic or an esoteric Buddhist speaking his native language tried to convert a High Street gamin. Diagram II represents the attitudes of teacher and pupil where teaching is just becoming possible—e.g. if a professor of pure mathematics

were to attempt to expound the dynamics of a crystal to a child of six struggling with the elements of number. Diagram III represents the normal attitude of teacher and pupil. It corresponds to the stage of preparation. The common segment represents knowledge which teacher and pupil have in common—that is, in kind though not in quality. This common knowledge is known as the pupil's apperceptive mass, as far as a single subject or interest is concerned. Any bundle of associated ideas is an apperceptive mass. All teaching, it will be plain, must start in the common segment, with the pupil's apperceptive mass, and it is the teacher's business to enlarge its bounds until they coincide with his own. Diagram IV, then, represents the stage of presentation where the apperceptive mass is seen growing; and Diagram V represents the ideal state where the presentation and assimilation have been so perfect that the pupil's apperceptive mass has become identical with the teacher's.

2. Another essential of vividness is a good voice. There is little need to say anything on this score except to state that the teacher's voice should be clear, distinct, and resonant. It should at least 'carry' well. It is, however, desirable to point out that there is a difference between the teaching voice and the ordinary conversational voice. In a room of ordinary size there should seldom be need for a teacher to speak with much more than his customary loudness. Continued strained loudness is in truth often a sign of weak discipline. But he should take care to emphasise the *key*-words in his sen-

tences. In every sentence there is at least one word which requires and, for the most part without intention, receives more *voice stress* than the others ; and if you were to take notes only of the key-words used by a good public speaker you would probably have a fairly accurate summary of his speech. In the teaching voice, therefore, the articulation of the key-words should be more distinct and emphatic than in the conversational voice.

3. Next, except in the education of the deaf and dumb, most of our teaching is carried on by the agency of words. It is certain that we rely far too much, at all stages of the educational process and in all branches of teaching, upon appeals to the sense of hearing. The Montessorian system, with its new emphasis upon the sense of touch as an important educational medium, is a protest against the over-emphasis which has hitherto been accorded to the sense of hearing. There is, it is admitted, far too much *talking at* and lecturing children. Now, if a teacher is to make a vivid presentation of his subject, he cannot be too careful in his choice of words. If you will refer for a moment to Diagram III (p. 187), you will see at once that the words which the teacher can most usefully employ about any subject must belong to the apperceptive mass or group of associated ideas which the pupil has already formed with regard to that subject. The pupil's ideas, and the words which he uses to express these ideas, are represented in the diagram by the common segment. Any new words used incidentally are puzzling and

distracting, for they tend to arouse divergent interest. I have felt this difficulty all through these lectures because, while addressing amateurs on the subject of education, I have been compelled to use technical terms—such as concept, stimuli, interest, apperceptive mass—which were not previously known to you, which did not belong to your apperceptive masses. But even in the use of words that are the common property of teacher and pupil there are elements of danger which you would do well to consider. It is not sufficiently realised how fragile is this bridge of words connecting teacher and pupil, speaker and listener.

Words may be divided into the two classes of (1) new and (2) familiar. With regard to the new words, if they are of a technical nature it is enough to say that, as a rule, their meanings must be thoroughly explained before the words can become part of the pupil's effective equipment. It is mere verbiage to introduce technical terms incidentally into any discourse. But at the same time it is necessary to utter a caution here. Progress in the acquisition of language would be impossible if the meaning of every new word had to be explained to a child before it could become part of the furniture of the child mind. It is unnecessary to make every meaning *explicit*. That is not how a child learns. A child learns the meaning of most words by hearing them repeated again and again with the same meaning in various contexts. It increases the range of its vocabulary not from a dictionary, nor from careful definitions by a teacher, but by an

unconscious process which goes on whenever words in their infinitely varied connections are presented to the mind and are heard for a first, second, or third time. It has been said that an unknown word in a sentence is like a passing shadow on a landscape :¹ though the eye may be able to discriminate nothing where the shadow falls, yet it may appreciate the beauty of the scene as a whole. Just so in a sentence : the general drift may be quite clear despite the presence of an unknown word.

But even the familiar words may be used by teacher and pupil in different senses ; for most words have two meanings, only one of which a speaker has clearly in mind at the moment of speaking. But the difficulty is that the mere utterance of the word may suggest the second meaning to the listener. For example, if I ask a young class 'What is a king ?' expecting to be told some of the kingly attributes of rulership, power, nobility, justice, &c., it is quite probable I shall get for answers Robert the Bruce, George V, &c. The qualities which are the meaning of a word form what in logic is called the *connotation* of the word. The mere objects to which the word may be applied form its *denotation*. And one danger in the use of even familiar words is that while the teacher is using a word in its connotative sense the pupil takes the reference in denotation.

Also, in the use of words, the teacher cannot be too careful in the matter of distinct articulation. Incorrect pronunciation, though it may be a mark

¹ Abbott, *Home Education*.

of ignorance, is really less responsible for distraction and misconception than the jumbled or mumbled utterance of a teacher who does not articulate his words and syllables distinctly. There is something culpably defective in the speech of a teacher when it can suggest to a pupil that the equator is 'a menagerie lion running round the earth' ! There is a story of a little girl who was taken by her mother to spend her first happy day at the sea-side. Wonder-struck, the girl gazed at the ocean for a minute or so and then exclaimed :—

' But I can't see any tinimies ! '

The mother was puzzled. ' Tinimies !—What do you mean by tinimies ? '

' Don't you know,' answered the little girl, ' the Lord made the seas and *all the tinimies* ? '

That is a familiar story, and doubtless many of you can recall similar misconceptions within your own experience. My object in resurrecting the story here is to illustrate one of the dangers underlying all instruction that relies mainly upon words.

The aids to vividness of presentation which we have considered are all connected, be it noted, with the sense of hearing. But spoken words are only *sounds*, and the memory for sounds is—except in the case of a few people—much weaker than the memory for *sights*. We remember a thing we have seen long after we have forgotten some sound associated with it. We have here, then, a principle of vividness which is of the greatest importance. As often as you possibly can, in all your teaching, appeal to the sense of sight. The bridge of sight is

much stronger than the bridge of words. The two faculties of sight and hearing employed together form the most sure avenues to knowledge that the human race possesses.

In making an appeal to the sense of sight, the teacher will use :—

- (1) Real things.
- (2) Models.
- (3) Pictures.
- (4) Diagrams.

But in addition to these (and specially, of course, in their absence) he will use (5) the blackboard.

You practical experts will be chiefly engaged in teaching subjects where the concrete material is, as a rule, within easy reach. Your pupils will be living amongst real things—will be constantly seeing and handling them. Consequently, you may think that the advice to keep your pupils in contact with realities is superfluous. Such a protest may have point provided you know the difference between seeing a thing and merely gazing at it. To see a thing in the sense which I mean, is to apprehend the thing in its relation to other things, and the relation of the parts to the whole thing and to one another. To look at a thing without perceiving anything of these relations is to gaze at it. Now, if you wish to train your pupils in habits of careful observation, you will find that even when the real things are present, or represented by ready-made models, your strongest auxiliary by far is the blackboard. If you have some dexterity in using chalk, you can readily make clear and explicit relations

which in the object itself are often obscured or concealed by details, for you can disentangle these relations and represent them separately on the blackboard. The blackboard is, in short, one of the main instruments of vivid teaching: indeed, in the hands of a specially gifted artist it can be more effective than the human voice itself. At any rate, an efficient teacher is always known by the way he uses his blackboard, and few lessons are perfect in which its aid has not been invoked during the presentation.

CHAPTER XI

TEACHING AND EXAMINATION

IN our last lecture we showed that all teaching must start from common ground—in knowledge that is the common property of both teacher and pupil, in kind at least, if not in quality. We represented this common knowledge by the common segment of two intersecting circles: the common segment representing the pupil's total apperceptive mass, but only a part of the teacher's. More simply, we may say the common segment stands for all that the pupil knows about a given subject, but only part of what the teacher knows. The purpose of teaching is to enlarge the pupil's mass until it becomes identical with the teacher's. The process of growth may be represented diagrammatically thus:—

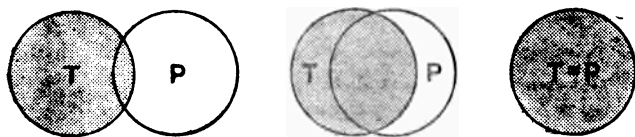


FIG. 7.

The special purpose of all preliminary teaching should be to equip pupils with such a stock of knowledge and with such skill that they may be able to

assimilate fresh knowledge and acquire greater skill. From this point of view there ought to be the most careful correlation between the instruction provided in the supplementary classes of our day schools and that provided in the continuation classes. Until these two systems are properly linked up the education provided in the one or the other cannot be regarded as satisfactory. Similarly, the education provided in the secondary school should prepare the student either for a professional career or for an extended education of culture at the university. The whole purpose of a curriculum is, in short, to equip the student with appropriate apperceptive masses—that is, with knowledge and skill suitable to the student's special powers and aims.

All teaching must start in the common segment. Now, in estimating the knowledge common to himself and the pupil, the teacher is apt to make one of two mistakes. In the first place, he very often takes too much for granted. He is prone to *over-*estimate both the amount and the quality of the pupil's knowledge. In such a case, we say he teaches 'over their heads,' and the pupils soon get 'lost'—that is, from lack of understanding, or want of ability to form the proper connections, they soon lose heart and interest in their work. At the beginning of a lesson or course of study the teacher cannot be too careful to discover what stock of knowledge the pupil has available for the purpose in view. In making such an examination he will often be astounded not merely at the ignorance revealed,

but at the extraordinary misconceptions which even intelligent pupils sometimes form and which are the result of previous bad or careless teaching. Most of you, doubtless, can recall examples of ludicrous misconceptions which you long cherished and puzzled over until the light of revelation broke upon you. Sunday-school teachers should be specially careful to avoid making the mistake of assuming full knowledge on the part of their pupils ; for religious instruction is from its nature bound to deal with abstractions which are very often quite beyond the pupil's understanding. A lady once confessed to me that as she had learned most of the hymns she was familiar with from the *oral* instruction of her Sunday-school teacher, who rarely condescended to explain them, for many years she entertained the most wonderful notions as to the meaning of certain words and lines. For example, in a well-known hymn this verse occurs :—

My faith would lay her hand
On that dear head of Thine
While like a penitent I stand,
And there confess my sin.

The picture of personified faith presented in these lines might puzzle even an intelligent adult, and is certainly beyond the understanding of the average girl of eight or nine. The first two lines of the verse were too hazy to disturb greatly a girlish mind, but the word ' penitent ' in the line—

While like a penitent I stand,

wholly captured her imagination. Not knowing

in the least what the word meant, she interpreted the sound as 'penny tent,' and for a long time an incongruous picture of toy tents and tin soldiers interfered with her devotions. An example like this warns us how careful we should be as teachers to probe into the most unsuspected corners. It also teaches us that the words we use cannot be too simple and familiar. Though our teaching may not be, in Matthew Arnold's words—

Deep as thought can follow feeling,
our explanations, at any rate, should be—

Clear as words can make revealing.

The second mistake sometimes made by teachers is quite in the opposite direction. They occasionally *under-estimate* the value of the knowledge forming the pupil's apperceptive mass. Our pupils often know a great deal more than we give them credit for. Their mental background is richer than we think, and they are apt to harbour just a little resentment against the teacher when they suspect that he is teaching *down* to their intelligence. The odds and ends of information which pupils possess furnish some of the delightful surprises of the schoolroom, and are frequently of great use to the teacher who knows how to turn them tactfully to advantage in illustration of some point. A recent experience of my own may serve to warn you how wary you should be in taking too *little* for granted. I was called upon to teach quite extemporarily what is known as an 'intelligence' lesson on 'Ye Mariners

of England' to a class of twelve-year-old boys. The lesson proceeded without incident until we came to the lines—

The meteor flag of England
Shall yet terrific burn,
Till danger's troubled night depart,
And the star of peace return.

None of the pupils knew what a meteor was; but as soon as the appearance of a shooting-star had been described to them they quite easily understood how the awe-inspiring qualities of a meteor flaming across the sky could be transferred to a flag flaunting in the wind at the masthead of a ship. A difficulty, however, arose with the word 'burn': How could a flag be said to burn in any sense other than the ordinary one? When the question was put to the class, one boy answered: 'Perhaps it was a red flag, sir!'

This appeared to be a very satisfactory explanation, as burn was then seen to be the doubly appropriate word. I was about to pass on when a small boy in the back seat held out a hand, evidently anxious to offer information.

'Please, sir, men-of-war don't fly a red flag!'

'Indeed! What flag does a man-of-war fly?'

'The white ensign, sir! The red ensign is the flag of a merchant ship.'

'Are you sure?'

For reply the boy produced from his pocket a collection of pictures of the flags of nearly all the nations of the world! He handed over illustrations of the white, the blue, and the red ensigns, evidence

clearly refuting what the class had just been asked to accept as a true interpretation. The teacher felt rather floored. It did seem impossible to make a 'white' flag 'burn.'

A new line of attack suggested itself.

'When was "Ye Mariners of England" written?'

From a note, the class discovered that the poem was written in 1810.

'Perhaps at that time our men-of-war did carry a red flag?'

The class looked dubious.

'Besides, the poem refers to the "flag of England." What is the flag of England?'

The higher critic in the back bench informed us that it was the Red Cross flag of St. George, and after consulting the printed matter on the back of the picture he added that the Red Cross flag of St. George was still the flag of the Admiral of the Fleet. Corroborative evidence that the flag referred to in the text was the Red Cross flag was at this point produced by another member of the class who, being evidently of a literary turn of mind, had discovered two other poems, printed in the same book,¹ in which the supremacy of England on the seas is symbolised by the St. George's Cross:—

And proudly has it floated

Through the battles of the sea,

When the Red Cross flag o'er smoke-wreaths played

Like the lightning in its glee.²

¹ Chambers, *Patriotic Poems for the Young*, selected by S. B. Tait.

² Felicia Hemans (1793-1835), *The Name of England*.

And since that day St. George's Cross
Has ruled the dark-blue sea,
For Nelson led the windward line
And Collingwood the lee!¹

Now, in this contest of 'apperceptive masses,' you will note that it was the pupils who contributed most of the new material of knowledge. As far as flag lore was concerned, several members of the class undoubtedly had much more information than the teacher. But one result of the tussle was that both pupils and teacher had their ideas regarding the meaning of the passage greatly clarified, and the apperceptive masses of all, with regard to flag lore, had been considerably enlarged.

In teaching, it is better to make the second mistake than the first. That is to say, it is safer at the start to underestimate rather than to overestimate your pupils' knowledge. The second mistake soon rectifies itself, and any special knowledge which some members of a class may possess can often be turned to good account as a means of securing the interest of the whole class. The 'sympathy of numbers' tells here: pupils often learn a great deal more from the class contributions than from the prelections of the teacher.

As long as the teacher is conscious of these dangers of underestimation or overestimation, he will probably have little difficulty in fixing upon the proper point of departure. As the strength of a chain is tested at its weakest link it is plain that a consideration of the attainments of the most back-

¹ Elizabeth H. Mitchell, *The Battle of Trafalgar*.

ward pupil in a class should furnish the correct starting-point in teaching. Moreover, just as an army advances at the rate of its slowest battalion, so the rate of progress of a class should be regulated by the pace of the slowest or least clever pupil in the class. It is the main problem of school organisation to classify pupils according to attainments, so that the conditions of steady progress for a class as a whole may be maintained. As a matter of fact, in practice these conditions are rarely satisfied. In our day schools the classes are so large that only a rough standardisation of attainment is possible, the age of the pupil being, as a rule, the main determining factor. In the continuation school, although the classes may be small, students of the most diverse abilities and attainments may be found sitting on the same bench. It is considerations like these that make all talk about appealing to the 'apperceptive masses' of our pupils sound rather hollow and unreal, and have caused psychology itself to be regarded somewhat sceptically by many teachers as failing to take into account the actual conditions of class-room teaching. For in practice what happens is that the teacher is compelled, except where the class is very small, to neglect the backward pupils—the weak links—and to appeal to the *average* intelligence of the class. The teacher generally teaches his class as if it were composed of just one representative pupil, or as an aggregate of identical units, uniform in their modes of reacting to the didactic material he imposes upon them in the form of lessons. This is the greatest fallacy

that vitiates class-teaching, for just exactly the opposite is the case. The average pupil is a pure abstraction. What in reality we have to teach is some fifty or forty or twenty pupils differing in endowment, disposition, temperament, and character, and all reacting in different ways and degrees to the same stimulus. As it is impossible, therefore, for the teacher to get into touch with the reciprocal elements in the activities of *all* the pupils, class teaching becomes a matter of compromise. And in casting about for a suitable starting-point for a lesson on any subject the class teacher cannot afford to accept as a basis the stock of knowledge possessed on the subject by the most ignorant pupil in the class. By a series of questions he discovers how much the pupils know about the subject; and, seizing upon some bit of knowledge that seems common to all, he makes this common ground his starting-point. When this common measure has been determined, the art of teaching, then, has for its aim the transference of what the teacher knows to the minds of the pupils, and as soon as the pupils can turn to use the knowledge imparted, then, but only then, can they be said to know it.

Teaching, then, consists in enticing pupils to learn—to assimilate—to associate—to apperceive. These four terms you will have learned by this time mean much the same thing. The processes of teaching and learning are mutually dependent. No teaching, no learning, can take place unless there is constant give and take between teacher and pupil. The teacher must not merely

present knowledge in a series of talks and lectures to which the pupil is a mere passive listener, but by means of question and examination he must constantly challenge the pupils' interest and activity. Not only are the teacher's questions tests of activity : they are absolutely necessary if teaching is to be a vital or dynamic process. Let me remind you, however, that new facts, fresh information, can never be elicited by any amount of questioning. By means of a question you may induce a pupil to reproduce some information recently imparted, or you may stimulate him to make an inference or draw a conclusion, provided you have supplied him with adequate facts or terms for premises ; but you cannot elicit what is absolutely unknown. This is such an obvious truth that it may seem hardly worth stating. Yet how much time is wasted by teachers attempting to ' elicit ' answers which it is impossible for the pupils to give, simply because the answers refer to facts which the pupils have never learned.

Though by a judicious question the teacher may suggest a certain line of inquiry, and thus put the pupil in the way of acquiring knowledge for himself, yet he cannot directly impart information by this means. But at the end of each section of a purely informative lesson, or at the close of a short exposition or explanation, he ought always to discover by questioning to what extent he has been understood. The knowledge he thus acquires will in its turn often lead him to modify both his method and rate of teaching. His questions

will follow the steps of the exposition and will thus help to emphasise the important and the salient points. The art of questioning, then, becomes a powerful means of satisfying both the law of vividness and the law of frequency. Moreover, when skilfully used, it is the teacher's main instrument for forming in his pupils habits of exact thinking.

Good teaching is thus once more seen to be *dialectic* in its method—that is, it consists in the rapid interchange of ideas between teacher and pupil with the aim of enabling the pupil to realise the relation of the new to the old. As soon as the pupil has a clear view of this relation—after he has compared, contrasted, associated, and unified or synthesised the new and the old—he should be able to state the new position attained. If the teaching has been *inductive*, he may be able to sum up the result in a statement of rule or of principle. If the teaching has been deductive, he should be able to apply or to 'work' the rule which has been explained. The dialectic treatment, be it noted, is not to be reserved for any one stage in a lesson. For example, if the formal steps have been followed, teaching by question and answer will be the procedure throughout the cycle.

In a previous lecture (p. 113) we considered the view commonly held that the dialectic process of question and examination is necessary only in the case of those subjects whose aim is to increase the intellectual equipment of the pupil—that is, in the more purely educative subjects of the English

and commercial courses. In the technical and domestic courses it might be said that the aim is to teach the students how to *do* things rather than to *know* things. An intelligent application of a rule is more important than the mere knowledge of theory. This is certainly true provided the application is intelligent. 'The best way to know a thing,' says Kant, 'is to do it.' That, you will remember, was also the philosophy of Squeers. But if any application is to be intelligent it must rest upon a sound basis of principle. Now I wish you practical experts to realise that the art of questioning can be as readily, as profitably, and as *educationally* employed in the teaching of trade or technical or domestic classes as in any of the other classes of the continuation school. To deny the truth of this statement would be to admit that there are no principles underlying the subjects you propose to teach. And if you desire that your pupils should establish these principles for themselves on rational grounds, the most effective weapon with which to attain your purpose is the method of question and answer. I press the claims of the dialectic method upon your attention at the risk of wearying you with the reiteration of its importance; because at the present time in the practical classes of the continuation school the art of questioning is not employed to the extent it should be. It is so easy for a teacher in any of those classes to give out a definite piece of work and, after showing how it is done, to ask the pupils to *imitate* his example as well as they can. The method is mechanical,

rule-of-thumb imitation. It has already been demonstrated that the formal steps cannot be followed in those lessons where the aim is principally the acquisition of extra skill. But this concession does not absolve the teachers of trade or domestic classes from the obligation they are under of making their pupils *think*. In those classes it is most important that the students should be trained to ask the why and wherefore of each step in every process. In cookery, for instance, there is, I suppose, a reason for each ingredient of a recipe as well as for the successive stages at which the various ingredients are introduced by the cook. The reason will be found to be based upon some chemical or physical law, or upon some principle of economy, expediency, or good taste. A girl should be taught *why* it is necessary to stir porridge and wrong to boil tea. In cabinetmaking, in millinery, and dressmaking there is the largest scope for teaching the principles of economy and practical logic as well as the canons of good taste both in form and colour. In all these classes much could be done either by direct instruction or incidentally to inculcate the principles of decoration by teachers who understand the art of questioning. It is undisputed that the French people are pre-eminent in all the arts of the cuisine. They are also the arbiters of fashion and the greatest decorative artists in Europe. It is no mere coincidence that they have long been recognised as the most logical race in the world. They have the genius for asking *why*.

Besides being the teacher's instrument for testing the fullness and accuracy of the pupil's knowledge, questioning, whether employed in inductive, deductive, or merely imitative teaching, must be regarded as the chief means of *education* in the schoolroom. From the teacher's point of view it is exceedingly important as a testing instrument, but it is in its inner or subjective significance for the learner that its chief value lies. If your questions do not set the learners thinking, if they do not promote lively interest and activity on the part of the pupils, but only secure a parrot-like reproduction of some information recently imparted, they have failed as *educational* instruments. For the aim of the best questioning is to stimulate our pupils to action on their own account, to form in them habits of right thinking, and to give them power of initiative. It is in his power of questioning that the teacher of genius reveals himself. By it he inspires in his pupils that alertness and independence of mind, and creates that searching and inquiring spirit which are the best guarantees of a sound education.

Good teaching, then, is a combination of direct address and interrogation: the one supplies the information; the other reveals whether or not the information has been assimilated. It may be noted that there are three stages in a lesson in which questioning is employed for different purposes:—

1. There is the *preliminary* questioning to discover the amount of information the pupils already possess. This should be searching, brief,

and animated. It will often lead the pupil to realise his own ignorance, and should arouse interest and expectation.

2. There is the *educational* questioning, to be used throughout the lesson. This is the most important of all, and facility in this difficult art can be acquired only by painstaking practice. If it is properly managed, the teacher will lead the thoughts of the pupils to conclusions generally predetermined in the teacher's mind. Questioning is especially valuable in inductive and heuristic teaching, because (1) it puts the student on the right road and helps him to avoid the wrong, and because (2) it focuses on the aim. Without judicious questioning much of what passes for heuristic teaching is sheer waste of time.

3. There is the *revisional* questioning, by which the teacher tests the success of his teaching—that is, tests the range and accuracy of the knowledge which his pupils have acquired during the lesson. It is very important that at the conclusion of every lesson there should be a rapid review of the salient points. Besides helping to drive home the new facts or truths, this final review gives the lesson unity and perspective. Above all, remember the law of frequency and its close connection with the permanency of impressions.

It will be in place here to indicate some features of good questions and good questioning.

1. Questions should be *simple and direct*, expressed in words carefully chosen and grammatically arranged.

As far as *form* is concerned, the interrogative form is to be preferred. Say 'What country does the peninsula of Gallipoli belong to?' rather than 'The peninsula of Gallipoli belongs—to what country?' The latter form of question becomes very irritating to listen to, and, moreover, can be used so as almost to suggest the answer.

2. Questions should be *definite*. Each question should admit substantially of only one answer—that which the teacher has in mind. The indefinite question admitting of many answers is perhaps the commonest fault of the inexperienced teacher, and it may well be considered the most serious. It has many mischievous results. It bewilders the pupils. It makes them doubtful of their own powers and of the teacher's capability. But, especially, it encourages random guessing, one of the most vicious intellectual habits of the schoolroom. When a general wins a victory by *guessing* what course of action the enemy on the other side of the hill is most likely to pursue (as Wellington is said to have done) his guess is really an intelligent anticipation, the result of reason and judgment, and not of mere caprice and blind chance. Guessing of this kind ought of course to be encouraged: most scientific hypotheses are, in truth, simply guesses of this sort; but the irrational guess cannot be too strongly condemned.

It is not always easy to frame perfectly definite questions; but indefinite questions are the cause of so much loose thinking that teachers should be very careful to avoid lapsing into the habit of

asking them. As an example of an indefinite question, suppose a teacher asks: 'What is there in the centre of Ireland?' it is plain that an infinite number of right or wrong answers may be forthcoming before the expected one, 'the Bog of Allen.' The definite question would be 'What is the name of the marsh land in the centre of Ireland?' preceded by 'What is the nature of the land in the centre of Ireland?'

Teachers should be specially careful to avoid *introducing* a lesson by means of a general or indefinite question. The opening questions, on the contrary, cannot be too direct and pointed. Yet some teachers seem to love to shroud in mystery the subject of the proposed lesson, and often consequently are embarrassed with answers which have only a ludicrous reference to the theme to be discussed. The indefinite question is responsible for many of the 'howlers' of the schoolroom. There is a story told of a teacher who desired to teach a lesson on marble. His first question was quite direct.

'What have I got in my hand?'

'A stone, sir!'

Instead of asking next 'What name do you give to this kind of stone,' he asked:—

'Can you give me the names of some stones?'

He immediately got the names of a score of stones—red-stone, blue-stone, sand-stone, precious stones, slate, granite—every stone, except, of course, marble. Red-stone, blue-stone might have suggested white-stone and so marble; but by the

perversity of things in this instance they failed to do so. At last he said : ' What sort of stones do you see in churchyards ? '

' Tombstones, sir ! '

' And don't tombstones remind you of another kind of stone ? '

' Please, sir, *brimstone* ! '

3. Questions should be adapted to the capacity of the pupils. The experimental questions which the teacher puts at the beginning of a lesson will soon furnish him with a gauge of the pupils' attainments.

4. Logical sequence is a mark of good questioning. Question and answer should follow one another in a connected series : question provoking answer, answer suggesting question. Frequently the answers given by the pupils tempt the teacher to become discursive and to wander from the point. As a rule he should resist such temptation and should deal in the main with only such answers as he expected and had framed his questions to obtain. At the same time the teacher of charm and genius will often make use of an imperfect answer, sometimes even a stupid or a wrong answer, to help out the main conclusion he desires to reach. It is a great privilege to watch such a teacher questioning a class : to observe how tactfully sometimes he ignores the statements of half-knowledge, when to supplement or correct them would take too much time or lead him too far from the point : how briskly at other times he accepts the half-adequate answer which he knows is in the true line of succes-

sion and can be immediately amended : above all, how skilfully he controls the whole complex process, heading the pupils off from this, that, and the other blind alley of thought or far-stretching avenue of knowledge, and guiding them along the main road leading to the final and destined answer.

5. The tone of a class can usually be accurately judged by the briskness and rapidity of the answering. Some questions of course demand longer time than others, but the experienced teacher can as a rule tell at a glance whether an answer is to be forthcoming. The pause should be just long enough to allow the pupils to take in the meaning of the question, and then without the waste of a second the answer should be demanded. This does not mean that the teacher is to hurry, but pupils are naturally more responsive to a teacher with a bright, brisk, cheerful manner.

6. The questions should be expressed in the teacher's own words. He should make himself independent of the text-book as soon as possible. It gives the pupils increased confidence when they find that the teacher knows his work. In addition, it teaches them that a text-book is, after all, not the final authority !

7. Variety of form gives charm to questioning. It is one of the features of interesting teaching that the pupils cannot anticipate the form of the question. This keeps expectation as it were on tip-toe. There is apt to be a deadly monotony, on the other hand, in that teaching where the questions are all of the

same unvaried cut-and-dry type to which we referred in paragraph No. 1. above.

8. Questions should not be suggestive, they should not tell much. It is a bad question which by its mere form conveys half the answer.

9. Questions that admit of a mere 'Yes' or 'No' for answer have their place in teaching, but care must be taken that the 'Yes' or 'No' is not a mere guess. An answer of this kind should be immediately followed by a 'Why?' to encourage the pupil to give a reason for the faith that may be in him.

10. As a corollary, it follows that every question requires a distinct intellectual effort before it can be satisfactorily answered. The intellectual stimulus which it gives is of course the chief reason for questioning at all.

11. The questions should be well distributed. This is a vital consideration if a high tone of healthy activity is to pervade the class. There are usually in a class some pupils who volunteer eagerly enough to answer most of the questions that the teacher asks, and who readily catch the teacher's eye. There are some, on the other hand, who, with wonderful dexterity, avoid meeting that same eye; and in an average continuation class, it may safely be said, the majority of the pupils are perfectly willing to let the anxious and bright spirits do most of the work. In a class, however, where the tone is high, every pupil recognises that he is responsible for a fair share of the work, and will rarely shirk doing his best when called upon. There

is, perhaps, a great temptation in our continuation classes, as at present constituted, to 'let sleeping dogs lie.' The case of the genuinely jaded and tired pupil calls indeed for delicate and sympathetic treatment, but, from the point of view of efficiency, the teacher must be careful not to allow his leniency to extend too far. A drowsy or lazy pupil is apt to infect his neighbour, and if a class suspects that a teacher is in the least degree 'soft' there soon springs up a crop of Weary Willies and Tired Tims numerous enough to interfere seriously with good effective work. The proper attitude of the teacher is to expect that every pupil who comes to the class comes fit to take his due share of the work and to respond to the teacher's call. Such of course is not the present state of affairs. There is no doubt that many students attend the continuation classes whose physical condition unfits them to derive the slightest benefit from the instruction provided. If you ask me how a teacher is to entice a class composed of such students to be responsive at all, I can only say 'Don't expect much. Do your best to keep them awake by interesting them. But if you think it best not to arouse them from their somnolence, do not mistake philanthropy for teaching.'

Let us now pass on to consider the answers which are the result of questioning. As a rule, skilful questioning will produce good answers. The special characteristic of a good answer is that it is the result of *thinking* by the pupil. It may have

faults of form, but if it has this virtue of thought it is a certain sign that the pupil is being educated. To be skilful in receiving and disposing of answers is the mark of the resourceful teacher. It is here, more than anywhere else in his work, that the teacher reveals his personality. It needs all the common sense, tact, and humour that he possesses to deal effectively with the wonderful diversity of answers which he receives. It is a compensating fact that the pupil so often reveals *his* personality in his answer. It is the glimpses of personality revealed in lightning flashes of question and answer that make the work of teaching of such enthralling interest.

In connection with the teacher's treatment of answers there are one or two points to note.

If no answer is forthcoming from a class the teacher is usually at fault. It is allowable for the sake of arousing curiosity and interest to ask a question which he knows is beyond the pupil's powers to answer. But if he fails to obtain an *expected* answer, he has miscalculated either his own powers or the powers of the class.

Wrong answers which are the result of caprice, wilfulness, or random guessing are a reflection upon a teacher's discipline.

The greatest difficulty, however, is in dealing with those answers which are partly right and partly wrong. The teacher must extract what comfort he can from the element that is right and proceed in a way encouraging to the pupil to unravel the difficulty by proposing other questions to sim-

plify the matter, and then in due course return to the original question so as to obtain the correct answer. It is a sign of great weakness to pass over any partial answer with a helpless 'Yes' or 'No.' The teacher must always encourage the student by giving him credit for any element of correctness which his answer may contain. If the ignorance is culpable, it should be treated with a dignified reprimand. But if it is the result of mere mental frailty it should be met with sympathy and kindness or at least ignored. The teacher must never treat the dubious answer with ridicule or sarcasm. These are the most dangerous weapons he can use. They never do any good. They often make a rebel out of a loyal and willing pupil, and they are alien and antagonistic to the very spirit of teaching.

While you have been listening to these lectures, doubtless many of you have frequently asked yourselves, 'How can I apply these doctrines to the teaching of my own subject?' Especially in connection with the subject of question and answer many of you feel that a good deal of what has been said is hardly applicable to the continuation class. The great difficulty with the continuation class pupil is to get him to be responsive at all. He refuses to be treated like the pupil of the day school. That, I think, is the common experience. Now, if we can find any reason for this unresponsiveness it may be possible to suggest some remedial measures.

We must inquire, then, whether this stone-wall,

stand-offish attitude of the continuation class student is due, in the first place, to any change in the student himself, and in the second place to any change in his environment. With regard to the change in the student, we must remember that he is entering, or has entered, into adolescence. We have already said something (see p. 11) regarding the characteristics of this stage of growth. We saw that it is accompanied by great changes, mental and moral as well as physical. The psychology of adolescence has only within recent years become the subject of special investigation, but the researches of Stanley Hall and others have already proved that the period has its own peculiar characteristics—a knowledge of which is of great importance to all who are interested in the education of youth. We cannot enter into a discussion of all those characteristics here. It is sufficient for our purpose to know (1) that during this period the emotions are stronger, more intense than at any other time of life, and (2) that the boy or girl passes from the active and percipient stage of mental life into the reflective and introspective stage. The growing youth is easily roused to anger, hatred, jealousy, love. The great novelists have all delighted in painting for us something of the tumultuous emotional life of the adolescent: Fielding in 'Tom Jones,' Thackeray in 'Pendennis,' Dickens in 'David Copperfield,' Meredith in 'Richard Feveril.' It would repay you to read these books again, and consider them from this new standpoint. As the developing boy grows introspective, he

becomes shy, self-conscious, unsocial, often moody and suspicious. The meaning of life, too, is beginning to dawn upon him, and, like a sensitive plant, he has feelers out in a myriad directions. He shows himself at this period particularly sensitive to the opinions and criticisms of others. In a psychological sense he is extremely responsive, but in proportion as he is sensitive he often becomes inarticulate. He is reluctant to express himself save in familiar company. He hates to show his feelings: he dislikes 'giving himself away.'

With respect to environment, social psychology has taught us this important truth that no matter how a person may behave as an individual, he may behave in an entirely different and unexpected way as a member of a crowd.

These considerations suggest that in order to break down the barriers of reserve and to entice the continuation student to express himself freely (1) the class must be small so as to allow of a large amount of individual tuition; (2) the teacher must gain the sympathy and confidence of the students. He will only succeed in the latter respect if he studies the individual idiosyncrasies of his pupils—their private needs and interests, prejudices, pleasures, and hobbies. It is difficult to read the secrets in the heart of a growing boy. But if, in retrospect, you can remember what you yourselves were like at the same stage, if you can recall your own youthful ambitions, yearnings, and impulses, if, in short, you can put yourselves in their shoes, you will get a little nearer to solving the mystery.

Lastly, what changes have taken place in the student's environment? He has left the day school and its rigid discipline behind him. At the same time, too, the home discipline is considerably relaxed. The youth takes his place in the workshop or factory, or in the busy marts of men, and he begins to have familiar dealings with grown men and with serious affairs. As a result, when he comes to the continuation classes—especially if he has allowed an interval to elapse since leaving the day school—he does not like being *schoolmastered* or questioned like a schoolboy. It is interesting to note that in our secondary schools, where the pupils are of the same age as the pupils in the continuation classes, there is hardly any difficulty in keeping the students almost as responsive as in the earlier formative years. The reason, of course, is that in the case of the secondary pupil there is continuity of discipline and little change of environment. These considerations, again, are very suggestive for us. First of all we must try to secure continuity of training and discipline. In the coming reconstruction of our educational system let us hope that a wise administration will see the necessity for every boy and girl passing straight from the supplementary course to the continuation class. In the second place the continuation class teacher would do well to reconsider and to readjust his methods of teaching, keeping in mind his pupils' new outlook and environment.

CHAPTER XII

THE STEP APPLICATION

WE come now to consider the last step—application.

We have already conceded that in teaching many of the so-called practical subjects it is impossible to follow rigidly the order of the formal steps. In many of the subjects there are in fact only three steps: first, you prepare the students for the lesson that is to follow; second, you present a good model of what you expect the students to imitate; and third, the pupils proceed to imitate as well as they can the model presented. The third step in an imitative lesson corresponds to the fifth or last of the formal steps. You will remember, however, that we pleaded for a larger amount of dialectic treatment even in the imitative lesson. Especially we asked that there should be frequent questioning and examination during the stage of presentation so that the pupils might understand the principles or the logical basis of each step in the construction of the model. If you do this, if you combine with your presentation skilful questioning as to the why and wherefore of each step, you are really satisfying the conditions of apperception; for by thus securing the pupils'

interest you are preparing the way for that lively, vivid assimilation of new ideas, which is all that apperception means.

Moreover, if you remember that there never ought to be any rigid division between the steps of a lesson, but that the steps should merge or fuse into one another, you will see that the difference between the method of an imitative lesson, and that employed in the ordinary lesson which aims at intellectual equipment, is more apparent than real.

Whatever the nature of the lesson, the last step is in every case the same. The pupil must be asked to apply the knowledge he has gained or imitate the art he has been observing. Remember, that just as performance is better than promise, so the doing of an approved thing is better than the knowledge of the thing. With regard to the share that the step application should have in a lesson, there are some important considerations which you should keep in mind.

1. It is generally true that far too little time is devoted in most lessons to this final step. Teachers do far too much for their pupils. They are usually so engrossed with the presentation, or with the *teaching*, that they do not leave sufficient time for the *learning*, forgetting that learning is much more vital than teaching. Plenty of time should be left at the end of each lesson for the pupils' self-adjustment, self-expression, independent judgment, and initiative.

2. If the knowledge learned is to be turned to use, it follows that all you teach should be related

to the ordinary, every-day life of your pupils. In most of our technical and domestic classes this condition is pretty fully complied with, but the same cannot be said of much of the teaching in the English and commercial classes. There the text-book views of industry, commerce, and general social relations have often very little reference to the actual conditions under which most of the pupils have to work. There is great need in the teaching of these subjects for greater elasticity of treatment as well as concreteness of aim. In our teachers we want greater breadth of view and courage to break away from old precedents and text-book views, and to start out on lines which will bring them into fresher views of thought and feeling and action in relation to the teaching of our young people.

3. Another consideration is that, although application is the last of the formal steps, this does not mean that there is to be no application at any other stage than the *end* of the lesson. Generally, of course, the application has its special place—at the end ; but at the same time you should be prepared to call for the application of what you are teaching as the opportunity occurs.

4. In asking the pupil to turn to use what he has learned, you should see to it that the reproduction is the pupils' own expression or his own handiwork—a poor thing, it may be, but his own.

5. Lastly, since the practical end of all education is to turn knowledge to use, it follows that you should teach nothing that is useless. Here let

me utter a caveat. It must not be supposed that because throughout these lectures so much emphasis has been laid upon the need for teaching useful knowledge that any advocacy of the aim of the Gradgrind School of 'Facts—hard facts, sir'!—is intended. Doubtless the practical side of education is the most important in forming character and moral force, in stimulating patriotism, and in adding interest to life. A practical education is certainly calculated to promote the material well-being of the race. There is, however, a tendency in our continuation classes to overdo the practical and to neglect those factors in education which are often scoffed at as 'useless,' but which have often a greater 'happiness' value for the individual than the severely practical. It would be an excellent thing if every boy and girl in our continuation classes could be induced to take along with a practical subject a course of English literature. We need a touch of the ideal to leaven the practical and to form in our pupils those 'happy' habits of thought which help to brighten 'the trivial round, the common task.' When, then, I advocate teaching knowledge that is useful, I do not mean useful solely in the material sense, but useful in the sense of contributing to an all-round happiness.

We have now considered all the stages of a lesson. It is only necessary to add that all the theoretical steps cannot always be taken in the time assigned for a single lesson. For instance, except for the minutes at the end of each lesson

which ought to be devoted to a recapitulation or review of the hour's work, it will sometimes be necessary to devote most of the sixty minutes to the step preparation. A second lesson will be taken up with the step presentation; and a third lesson may be entirely devoted to the step application. In many of the trade classes, again, the step application will occupy most of the time. The main consideration is that the teacher should realise exactly what part of the lesson-cycle he is engaged with and make certain that the teaching at that stage is as effective as he can make it.

HOW TO IMPRESS A LESSON

It is almost needless to say that if your pupils do not remember at least the salient points of the lesson, you have been largely wasting your own and your pupil's time. To teach effectively, you must impress the important facts so that they become permanently fixed in the pupil's memory. From this point of view, it might be considered that one of the chief aims of the educator should be to train the memory; for it might be argued that to a trained memory the acquisition of all knowledge should be comparatively easy. A trained memory would be an easy road to learning. It is necessary that I should refer here to what psychology teaches us about this so-called training of the memory. An obsolete, old-fashioned psychology used to divide the mind up into so many *faculties*, each faculty having its own special work to do. Each had even a particular region of the brain

assigned to it in which to do its work, so that the phrenologist by examining your bump of knowledge, or bump of imagination, or bump of memory, could foretell exactly in which department of life you were qualified to shine. Modern psychology has quite exploded the theory of faculties. We now know that there is no special faculty of memory, or faculty of imagination, or faculty of willing. The mind is not divided like a chessboard, or a tessellated floor, into so many little compartments, each having its special work to do. The mind simply remembers, imagines, wills, &c.: that is, remembering, imagining, willing, &c., are only activities of the one indivisible mind distinguishable only by the phenomena in which they manifest themselves and, perhaps, by the feeling which accompanies them. You cannot train a memory: you can only train a mind to remember facts or experiences in which it is specially interested. When you see in the newspapers advertisements regarding 'systems' for training the memory, with alluring promises of professional or business success for those who accept the advice, you must accept the statements with many grains of salt. The so-called systems are simply survivals of the 'faculty' psychology. Sometimes, however, they are not without value; for they are usually skilful, if artificial, applications of the principle of association.

To explain how the mind *remembers* would be to discuss again the psychology of association. We have said enough on this score in our third and fourth lectures. It is only necessary here to

emphasise one or two points. We remember one event, or fact, or experience by its association with another. Association is the connecting link between mental facts. In virtue of this connection the excitement of one idea tends to re-excite others of similar nature or of contemporaneous origin. For example, if you have ever been present at a great fire, and watched the arrival of the fire brigade, it is fairly certain that you will never afterwards see the fire-engine on the street without having a vivid remembrance of the conflagration. It is not our business to inquire deeply how or why this connection is formed, but it is of prime importance for us as practical teachers to know the *conditions* under which association works. For it is only by satisfying those conditions in our teaching that we can hope to *impress* the facts or contents of our teaching upon the minds of our pupils.

REPETITION AND VIVIDNESS

When dealing with the preparation and presentation of a lesson, we emphasised the importance of *frequent repetition* and of *vividness* in teaching. It is necessary to refer once more to these principles as the main conditions of association. Most of our associations are formed of things or events which have been in frequent juxtaposition. This principle of *frequency* is the first condition of association. In infancy, indeed, it may be considered the only condition of association. A baby very slowly comes to remember even those things with which it is in constant contact. A long time elapses

before it recognise even its nurse or its mother. But the experiences learned in childhood and youth, mainly by their frequent occurrence, are precisely those which remain with us longest. It is a commonplace observation that old people often have a vivid and detailed recollection of early associations—of their school companions and the haunts of childhood—although they may not be able to recall the happenings of yesterday. You perhaps find it tedious that I should put such stress upon the importance of frequent repetition of the salient points. You all agree that frequent repetition is most necessary. I hope that when you are put in charge of a class, you will carry your belief into practice and not shirk the routine because you find it rather dull and irksome. I believe that there is more waste of teaching power due to insufficient repetition than to any other cause, unless it be inadequate preparation. So many teachers are content merely to lecture: considering that if they make a statement once in a clear and—in their view—a *convincing* way, they have satisfied the conditions under which a thing may be learned. There cannot be a greater fallacy in teaching. You must *revise and repeat, repeat and revise*.

If I may venture on the almost sacrilegious substitution of a line, no words can more effectively express the importance of repetition as a factor in teaching than this familiar verse:—

Though perfect eloquence adorn
 Your sweet persuading tongue,
 Though you can speak in higher strains
 Than ever angel sung,

Though prophecy your soul inspire
And make all mysteries plain,
Yet if you don't repeat your points,
These gifts are all in vain.

On the subject of repetition, let me add this suggestion. In order to satisfy the condition of frequency, some teachers adopt the practice of keeping the main points of a lesson on a spare blackboard for some days, and of hanging upon the walls of a room illustrations and diagrams referring to lessons which have been taught. These serve as a basis of reference. The theory underlying the practice is that the pupil learns a great deal about its environment casually and almost sub-consciously.

VIVIDNESS : ILLUSTRATION

Next to frequency of repetition the most important condition of association is the vividness with which facts that we wish to become associated in the pupils' minds are presented by the teacher. This principle of vividness has been already analysed (Chapters III and VIII). It was shown to depend upon, mainly, (1) an appeal to the eye and (2) an appeal to the ear. There is no need to enlarge upon the points discussed under these heads, but there remains one most important factor of vivid teaching which we can now appropriately deal with when we are talking about how to impress a lesson. I refer to *illustration* in teaching.

Illustration plays such an important part in all vivid teaching that good judges will often *place* a teacher according to the kind and quantity of

illustrations he uses. It is safe to say that the teacher who never illustrates is too lazy or too ignorant or too indifferent. A weak disciplinarian is often timid about illustrating, either because he is mistrustful of his powers or because he knows that his class is likely to get out of hand while he is engaged at the blackboard. There is little danger of illustration which appeals to the eye being carried to excess, except when employed without relevancy or propriety. There was once a schoolmaster in this city famous for the extremes to which he pushed this principle. The panacea for all troubles of exposition and discipline was the application of one formula: 'Illustrate, sir, illustrate!' On one occasion while making his morning peregrination of the classes, he heard an appalling noise proceeding from the room occupied by a very young teacher who had only recently joined the staff. Abruptly entering the room, he found himself in the midst of a scene of uproar and confusion, with the pupils in a state of joyful excitement. Looking for the teacher, he discovered him blindly groping with outstretched arms round the walls, across the floor. With amazement and consternation in his voice, he inquired of the teacher what he was doing.

'What you told me to do, sir!'

'What was that?'

'To illustrate, sir!'

'And what in the name of all that's wonderful are you illustrating?'

'The story of Blind Bartimæus.'

Illustrations may be divided into two classes : (1) oral illustrations and (2) pictorial illustrations. The oral illustration may consist of a relevant story, an apt quotation, a striking example, or it may consist simply of the explanation of an unfamiliar word, or an elusive metaphor. Teachers differ greatly in this power of oral illustration. The teacher with a mind richly equipped with a fund of apposite allusions usually has little difficulty in keeping a class thoroughly interested in its work, even though he may not have—

An eye like Mars to threaten and command ;

for by the aid of illustration he can often give piquancy and point to many a dull paragraph. Oral illustration has its place in the teaching of every subject of the curriculum ; but perhaps it exercises its most important function in the more purely humanistic studies—such as English literature. But oral illustration can sometimes be carried to excess. Some minds are so sensitive to suggestion that a lesson occasionally becomes one tangled mass of illustrations, and the teacher degenerates into a talkative bore. Careful preparation is the best safeguard against this danger of tangential illustration, for a careful preparation will always determine which points of a lesson require oral illustration.

The illustration, however, which serves to give the greatest vividness to a lesson is the pictorial. Now, pictorial illustration is seldom pure : it requires assistance from the teacher's voice and

hand. The teacher may have his illustrations ready made in the form of pictures, maps, and diagrams—in which case he has merely to explain the points which are relevant to the lesson. But the most effective illustrations are those which the pupil sees in the making, and are usually either rough sketches of an object or *diagrams* illustrating some *relation* which the teacher wishes to make clear. A diagram is simply a picture stripped of its unessential accessories for the purpose of teaching, and is in one respect preferable to a picture, because it does not afford the same opportunities for arousing divergent interest. Diagrams have already been used in these lectures to illustrate relations. I would be venturing on too dangerous ground if I tried to show how a diagram should be used in illustrating any of the technical subjects taught by you practical experts ; but, here on the blackboard, you see a diagram (p. 233) which will help to show how a teacher might explain to a class the meaning of a metaphor or an analogy. A metaphor, or, in its extended form, an analogy, is sometimes very difficult to explain. The only thing more difficult is to show how the poet ever came to make the metaphor. It may be said, too, that a metaphor explained is often a metaphor spoiled ; for the student of a logical turn of mind soon perceives that there are very few metaphors which go all the way, or which are entirely consistent. But at the same time many metaphors are capable of diagrammatic representation. Take the following lines from Tennyson's ' In Memoriam ' :—

... Life is not as idle ore,
 But iron dug from central gloom
 And heated hot with burning fears
 And dipt in baths of hissing tears
 And battered with the shocks of doom
 To shape and use.

DIAGRAM ILLUSTRATING AN ANALOGY

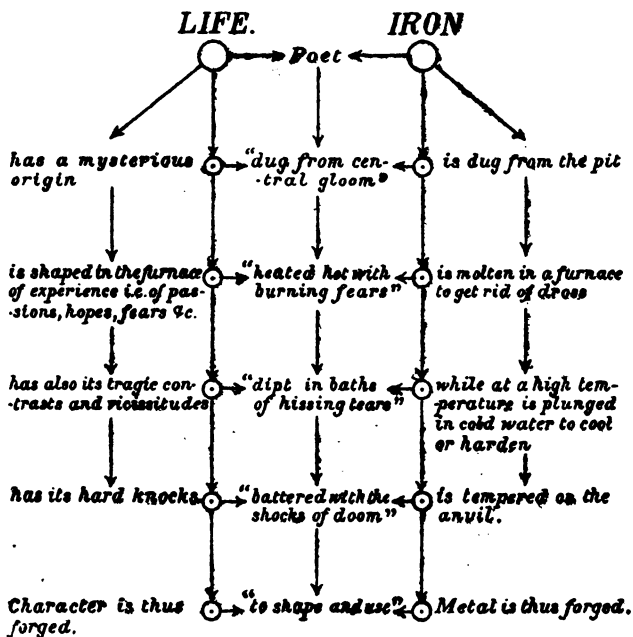


FIG. 8.

A scheme or diagram, such as we have on the blackboard (p. 233), might be used to teach inductively the meaning of an analogy. The pupils see from the diagram that in the forming of character

and in the forging of metal there are steps or stages which have a general correspondence. The poet seizes upon this similarity or parallelism, and, describing life throughout in terms of iron, makes his analogy, which is then seen to be simply a statement of similarity or parallelism of relations. It is the secret of genius to see this relation, and at the same time to find the golden phrases of fact and fancy which give it poetic expression. The scheme

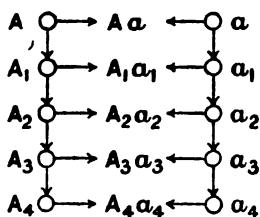


FIG. 9.

on the blackboard (p. 233) would be a pure diagram if corresponding symbols were substituted for the actual sentences, thus (Fig. 9) :—

A₁ and a₁, A₂ and a₂, &c., are corresponding steps, and A₁a₁, A₂a₂, A₃a₃, &c., form the statement of the analogy.

The general parallelism is suggested by the vertical arrow-heads.

It is easy to see the correspondence of the several relations in the analogy from 'In Memoriam'; but, as a rule, a metaphor seldom expresses more than a single relation, which is often of a subtle and elusive quality. For example, in the favourite pulpit simile from 'Adonais' :—

Life like a dome of many coloured glass
Stains the white radiance of eternity,

it is surely nonsense to say that there is any obvious similarity or correspondence between Life and a dome of glass. The sentence sounds majestic, and

the thought is mystical and immense in its range and sweep, but the expression suffers from extreme condensation. With a class of advanced students I have applied the method of graphic analysis to this simile, and have sometimes been satisfied that the meaning was apprehended by some of the students with some definiteness.

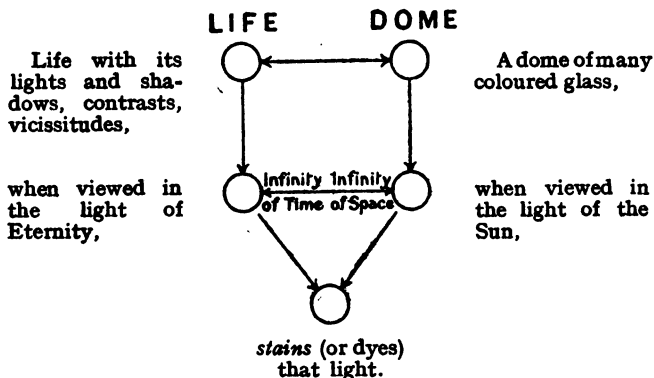


FIG. 10.

In other words, all that life offers us is broken lights—beautiful but fragmentary.

I have obtained better results, however, with a diagram like this (Fig. 11), where the pictorial element is more in evidence :—



FIG. 11.

The students were asked to compare these two pictures and to pick out the corresponding elements. They used to say that the halo helped them to understand the 'white radiance'!

It is, however, in dealing with statistics that the diagram has its most vivid application. For instance, in dealing with enormous numbers—for example, hundreds of thousands and millions—it is often advisable for the sake of concreteness to reduce these numbers proportionally to a standard that is within the pupils' comprehension. For this purpose the diagram cannot be too simple. For example, if I wished to impress my pupils with the enormous size of the population of London, I might represent the population of Edinburgh by a line a unit long, and London by another parallel line twenty units long. If I wished the pupils to compare the areas covered by the two cities, I would represent the area of Edinburgh by a square unit, and the combined areas of London and Edinburgh by a rectangle containing forty square units. It is not uncommon to find areas represented by diagrams which, although accurately drawn to scale, fail to convey an accurate impression to the pupil. For example, if the areas of Edinburgh and London are represented in circular measure (Diagram III), it is plain that the eye of the pupil cannot accurately gauge the true proportion between the areas covered by the small and the large circles. Suppose, for example, the reader tries to discover whether Diagram III is accurately drawn to scale. The

smaller circle ought to measure itself thirty-nine times into the larger. Does it seem to do so?

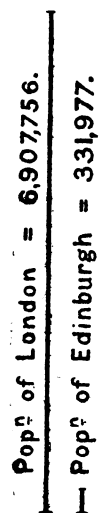


Diagram I.

Area of London = 442,880. acres.
" " Edinburgh 41,416. "

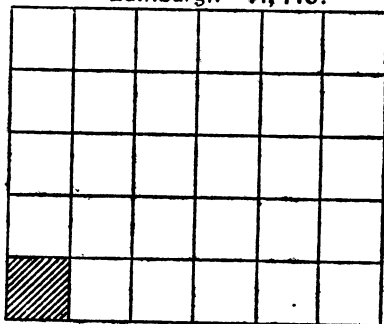


Diagram II.

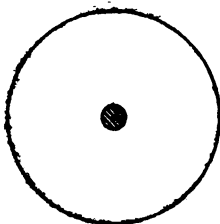


Diagram III.

FIG. 12.

Another kind of illustration which can be effectively used in dealing with statistics is the picturesque or realistic illustration. This consists in substituting familiar objects and standards of measurement in place of objects and dimensions which are quite beyond ordinary experience. For example, if you have ever stood for half an hour watching a dozen battalions of infantry marching

past, the impression made upon your mind is much more vivid than if you had merely read in the newspapers that 10,000 or 12,000 soldiers had been on parade. Now suppose we reckon the number of combatants under arms in Europe at the present moment at 16,000,000 men (a moderate estimate): is it possible to make you appreciate what this number means? The bare arithmetical figures fail to impress you: as soon as we have to deal with millions, the addition or subtraction of a cipher or two almost escapes attention. But the enormity of the numbers, though they can never be realised, can yet be impressed upon the mind by a homely illustration. Let us make the 16,000,000 men march past, four abreast, at three miles an hour! How long will this seemingly interminable line of men—just 2272 miles long!—take to pass us? Marching steadily, day and night, without break or pause, they will take almost exactly thirty-nine days to pass!

The following extract from the daily press is a good example of the picturesque illustration:—

Mr. Herbert N. Casson, speaking (of the War) in London, said: ‘. . . We always used to have a million who could do nothing but eat. Half of them were now making shells! Our army of 275,000 became 4,000,000 in such quick time that we could not count the men as they came in! Four million soldiers meant one soldier for every acre in Yorkshire, one for every two houses in Great Britain, and thirty-three for every square mile of this island. . . . Let every man carry 500

sovereigns and then we had the army and the cost. An army which would reach, marching four abreast, from Land's End to John o' Groat's. We could stand our army round the coast-line, elbows touching, and with every man bearing his own weight of silver, we had the cost. No one could realise this War. If Julius Caesar saw this War—a war costing £10,000 a minute—he would die of fright. If Napoleon saw it, he would want to get out of the business and keep a cigar-shop. If he saw 40,000 shells an hour being fired, he would die of amazement. The great battles of history were only riots.'

Again, it will be readily allowed that the human mind cannot realise what is meant by the enormous distances in astronomy. The meaning of these numbers is brought home to the ordinary unmathematical mind in a striking way by an American writer. He invites his readers to make a journey with him to the nearest of the fixed stars, in an express train travelling at sixty miles an hour. The train will take just 48,500,000 years to arrive there! The single ticket at a halfpenny for each hundred miles will cost £750,000,000! ¹

Sir Robert Ball used many striking illustrations of a similar kind. We are apt to think that the inhabitants of the other heavenly bodies, supposing such to exist and to be able to see what is going on down here, will see what is going on *now*. From some experiments based on the velocity of light, Ball shows that the inhabitants of *a* Centauri,

¹ Prof. J. Adams, *Exposition and Illustration in Teaching*, p. 301.

gazing down upon us some clear night, might see not the present world carnage, but the French and British armies waiting for the dawn of Waterloo ! Pursuing the same train of reasoning, we might conclude that the inhabitants of some of the remoter stars may at the present moment be watching the agony of Christ on Calvary, or that some of the stars we see twinkling in the sky to-night may really have been annihilated 100 or 1000 years ago !

You will probably agree that picturesque illustrations like these are much more impressive than the bald figures can be. Mere arithmetical figures fail to impress us not only because the totals which they stand for may be beyond the grasp of our thought, but partly also because we have become so accustomed to them as the ordinary medium of calculation. We have become callous, in fact, through long custom and over-stimulation. There is a stage reached in our intellectual and emotional life when it is not easy to make vivid impressions upon our minds. Intellectually and emotionally, we become *saturated*. The present critical times, when sensation is piled upon sensation, furnish us with plentiful examples. The newspapers; by means of lurid placards, attempt in vain to stimulate our jaded senses. What at the beginning of the War was regarded as an almost unendurable horror is now accepted as an ordinary occurrence. It takes the sinking of a *Lusitania* to rouse us from our indifference. The same reason explains why the distances of stellar space fail to move us. In psychological terms the figures are beyond the

Threshold of Stun. Illustrations, like those used by Sir Robert Ball, though they do not bring us any nearer the truth, teach us in a vivid lively way how unrealisable the stellar distances are. They substitute a sense of wonder for a mild matter-of-fact acquiescence; and to keep alive the spirit of wonder should be one of the aims of the educator.

Enough has been said to show how all important in teaching is illustration as a factor of vividness. It remains to make a suggestion regarding a third condition of association. We are prone to associate things which have been in *recent* juxtaposition. You remember the points of to-night's lecture much better than the points of last week's lecture. You apply this principle of *recency* at the end of your lesson when you review or recapitulate the main points of the lesson and *summarise the results on the blackboard*. The blackboard summary will remain in the memory long after the minor details of the lesson have been forgotten. The blackboard summary, then, is another important factor in impressing a lesson. It is not every teacher who can make a lesson vivid, but the average teacher can always satisfy the other two conditions of association—viz. frequency and recency. He can always *repeat* and *use the blackboard*.

ASSOCIATION AGAIN: ARIADNE'S THREAD

Finally, association simply means linking together. If a thorough preparation of your lesson has ensured a lucid and logical arrangement of parts, if question and answer follow each other

in a linked sequence, you can safely leave the associative process to take care of itself. But the *linking* is all important. Some of you may not know the story of the labyrinth which the clever artist Dædalus constructed for Minos, King of Crete. This maze was so wonderfully constructed that it was almost impossible for a human being to penetrate to the heart of it. If he did succeed in arriving at the centre, he was most likely to be swallowed up by the terrible monster, half bull, half human, called the Minotaur, which lived there. If he escaped from the jaws of the Minotaur he was almost sure to perish while attempting to *retrace* his steps. It was one of the feats of Theseus to penetrate the maze, to kill the Minotaur, and to return alive. He was enabled to do this by the help of Ariadne, who gave him a *ball of thread* which he carefully unwound, leaving a line of thread behind him to mark the path of his inward progress. After he had killed the Minotaur, he was able to retrace his steps by means of the thread.

Now I do not wish to elevate Ariadne's thread to the level of an educational principle, because from one point of view it may stand for all that is mechanical in teaching. I only use it to illustrate the principle of association. From this point of view, as a guiding or linking thread, it symbolises the principles of induction and deduction, of analysis and synthesis, in teaching. It is not enough that you should lead your pupils to build up a rule: they should be able to retrace their steps and intelligently apply the rule. Again,

when we enunciate a rule and proceed to apply it, then as a result of this application we should endeavour to build up the rule on an intelligible basis.

If you have done your best to satisfy the conditions of remembering—if you have taught *vividly, repeated frequently, linked your points together, and summarised the salient points on the blackboard*—you have done all that a teacher can do to impress a lesson. You must not be unduly disappointed if some of your pupils still fail to understand the principles you have been teaching. After all, you are not responsible for their lack of native endowments. No teacher can add a single milligram of gray matter to a brain! Some intellects work much more slowly than others. But while you cannot afford always to accommodate your teaching to the weakest intellects in your class, you should take care never to teach *above* the average reach of your pupils. Above all, you must take nothing for granted. Teach slowly rather than with undue haste. Remember that raw haste is twin sister to delay. When you do find yourselves up against the dead wall of incapacity, ignorance, or misunderstanding, you can always take to heart the advice which Prof. Chrystal used to say his old teacher was wont to tender to his backward pupils. When they failed to understand a problem which he had patiently explained, he would exclaim:—

‘If ye hav’na the wut¹ tae see’t, ye maun juist bide till it *sipes*² in!’

¹ Wit.

² Soaks.

SUMMARY OF THE PRINCIPAL TEACHING RULES

1. Frequency : Repeat and revise, revise and repeat—*Repetitio mater studiorum*.

2. Vividness :

- (a) Speak distinctly, deliberately, pleasantly.
- (b) Be bright and alert in manner and bearing.
- (c) Adopt the correct teaching 'position' : stand well back from the front benches and address the pupils in the back rows.
- (d) Arrange your class as compactly as circumstances permit.
- (e) Have the matter of your lesson arranged in a clear, logical sequence.
- (f) Illustrate :
 - (1) *Visually*, by means of the black-board—using diagrams, sketches, &c. Use the blackboard freely.
 - (2) *Orally*, by means of relevant examples, stories, parallel instances, &c., at appropriate places.
- (g) Teach with appropriate emotion and earnestness.

SUMMARY OF TEACHING RULES 245

3. Recency : At the close of each lesson revise the points you wish to emphasise.

4. Novelty : Prepare your lesson thoroughly ; present either the new material in an old setting or the old material in a new setting.

5. Association :

- (a) Associate similar or contrasted things (similarity).
- (b) Group facts according to a place-connection (contiguity).
- (c) Emphasise the causal connection between events (causality).
- (d) Experiences are best remembered which have been associated *emotionally*.

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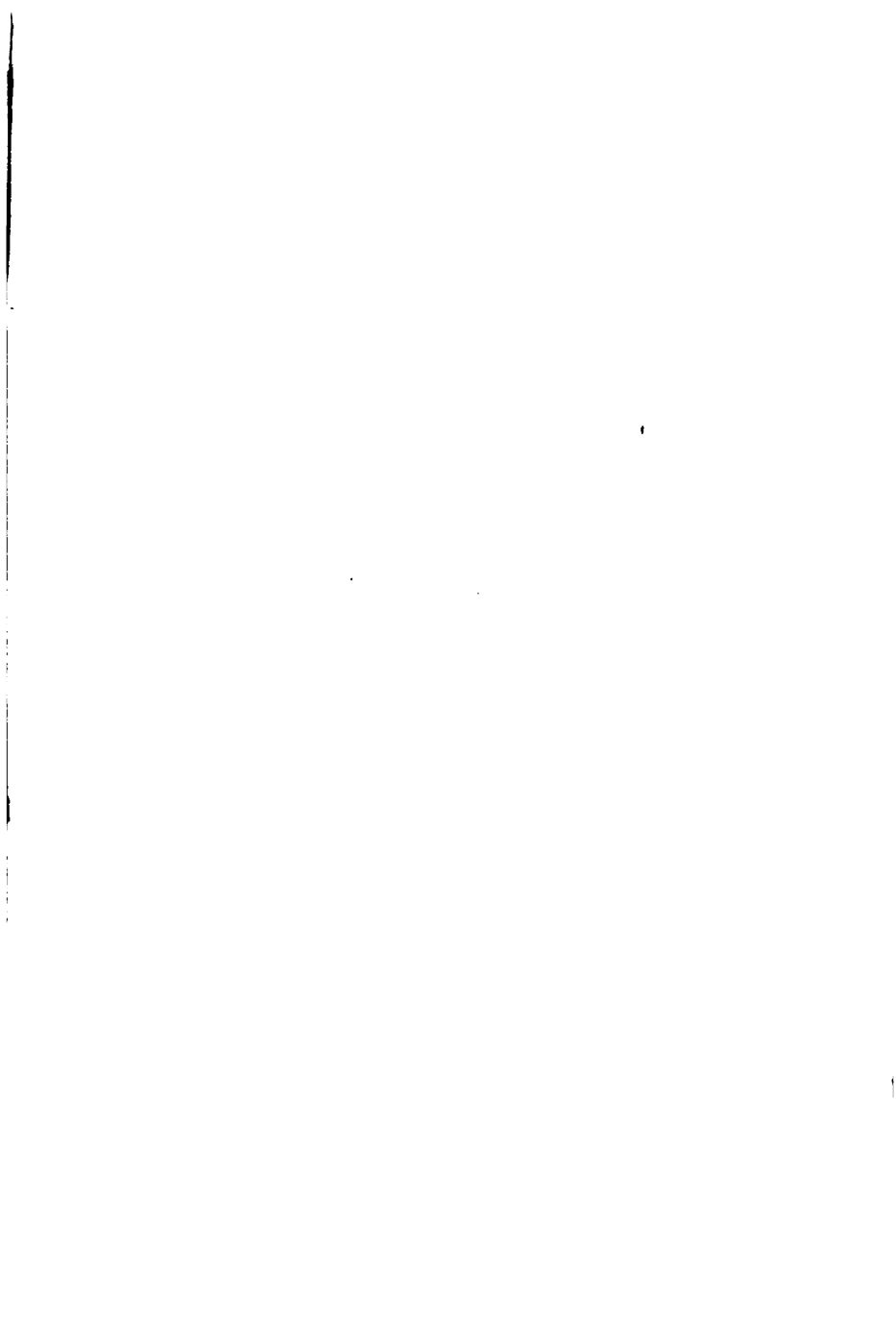
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